DOCUMENT RESUME

ED 200 159 PS 013 650

TITLE	Faculty Workshop on Clinical Instruction for Podiatric Medical Education. Final Report and Proceedings (June 30, 1979).
INSTITUTION	American Association of Colleges of Podiatric Medicine, Washington, D.C.
SPONS AGENCY	Health Resources Administration (DHEW/PHS), Bethesda, Md. Div. of Medicine.
REPORT NO	HRP-0902787
PUB DATE	Jun 79
CONTRACT	HRA-232-78-0148
NOTE	287p.
EDRS PRICE	MF01/PC12 Plus Postage.
DESCRIPTORS	Clinical Experience; Competency Based Education; *Curriculum Development; Curriculum Evaluation; Faculty Development; Higher Education; Interpersonal Competence; Medical Education; *Medical School Faculty; Medical Schools; *Podiatry; Student Evaluation; Teacher Evaluation; Teacher Workshops; Teaching Hospitals
IDENTIFIERS	Clinical Teaching (Health Professions)

ABSTRACT

A faculty workshop is reported that assessed in great detail the present state of podiatric medicine, its educational system, and its role in health care. Alternative methods to plan, implement, and evaluate changes in the clinical curriculum were explored carefully. Four major questions were considered: (1) What is the profession of podiatric medicine? (2) What does society demand and need from the profession? (3) Toward what goals should podiatric medicine strive? and (4) How can podiatric medicine meet society's and its own expectations? Recommendations set forth the need to identify rather precisely the role of the profession in order to develop an appropriate clinical curriculum. Recognition was given to the importance of including in any curriculum adequate attention to methods that may be used to assess the clinical competence of graduates of the colleges of podiatric medicine. The proceedings of the workshop and an evaluation of the faculty workshop by the participants are given. Included in this report are 15 papers that were formally presented at the workshop on such topics as the evolving health care system, clinical curriculum, primary care, competency based education, and teaching problem-solving. (Author/PJM)

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HRP-0902787

ED200159

Faculty Workshop on Clinical Instruction for Podiatric Medical Education

Final Report and Proceedings
June 30, 1979

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
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Submitted to:
Division of Medicine
Health Resources Administration
U.S. Department of Health,
Education and Welfare

Prepared Pursuant to
Contract # HRA 232-78-0148

HE013650

The American Association of Colleges of Podiatric Medicine

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This report is made pursuant to Contract #232-78-0148. The amount charged to the Department of Health, Education, and Welfare for the work resulting in this report (inclusive of the amounts so charged for any prior reports submitted under this contract) is $60,372.00. The names of the persons, employed or retained by the contractor, with managerial or professional responsibility for such work, or for the content of the report, are as follows:

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INTRODUCTION

Podiatric medicine has experienced a major metamorphosis in the past two decades. Indeed, this metamorphosis is far from over and continues to have an enormous impact on the education and training conducted in the colleges of podiatric medicine.

The profession has evolved to a point at which its practitioners might reasonably be defined as physicians specialized in the prevention, diagnosis, treatment of the diseases and disorders affecting the foot, and rehabilitation of the affected member. It has widened its educational base at both the first professional degree and residency levels to accept the responsibilities inherent in this broad definition.

But such a definition is a source of confusion. Questions are being generated by the profession itself, its schools, other professions and the public regarding the current status of podiatric medicine, particularly in terms of its clinical education and training. Closely related to such questions are concerns for the role of the profession in the overall health care delivery system, and the directions in which Podiatry is developing. Once such questions are resolved, changes in the clinical

curriculum of podiatric medical colleges can be made to implement policy decisions. If developed appropriately, revised clinical curricula will be structured so as to facilitate evaluation of their impact and effectiveness.

In response to a request for a proposal by the Health Resources Administration (RFP # HRA 232-7E-0936), the American Association of Colleges of Podiatric Medicine was awarded a contract to develop and conduct a faculty workshop in clinical instruction for podiatric medical education. This workshop assessed in great detail the present state of the profession, its educational system, and its role in health care. Alternative methods to plan, implement and evaluate changes in the clinical curriculum were explored carefully. Recommendations were generated which set forth the need to identify rather precisely the role of the profession in order to develop an appropriate clinical curriculum. Recognition is given to the importance of including in any curriculum adequate attention to methods that may be used to assess the clinical competency of graduates of the colleges of podiatric medicine.

Following the list of those who attended the faculty workshop, a narrative is presented which attempts to summarize the proceedings of the program. The narrative represents the collective judgements of the participants as snyopsized by the primary faculty.

If one were to take a consensus of what the representatives of each of the colleges of podiatric medicine hoped to accomplish by attending the clinical faculty workshop, there appeared to be four questions that they wanted to resolve as individuals, colleges and as a profession. These were:

1. Who are we (i.e., what is the profession of podiatric medicine)?
2. What does society demand and need from the profession?
3. What do we want to be (i.e., towards what goals should podiatric medicine strive)?
4. How can podiatric medicine meet society's and its own expectations?

While this report was prepared by the primary faculty, it should be emphasized that it is an amalgamation of the conclusions generated by faculty from each of the colleges of podiatric medicine and the other participants who were in attendance.

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I. A PHILOSOPHICAL BASIS FOR THE PODIATRIC MEDICAL CURRICULUM

A. The Health Care System and the Evolution of Podiatric Medicine

1. Strengths

In order to determine the curricula content for clinical instruction in podiatric medicine, it is essential that an appropriate perspective be drawn regarding the relationship of the profession to the total U.S. health care system. Such a perspective will help to identify both the mission of podiatric medicine in a complex, changing world and the many factors that may influence the evolution of the discipline.

A critical examination of the existing state of health care in the United States frequently results in a laundry list of weaknesses, to the exclusion of many strengths which are present. The remarkable scientific and technological base of American Medicine, which continues to grow rapidly, must be considered the hallmark and one

of the greatest strengths of the U.S. health care system. One need only compare the knowledge, skills and resources available to aid patients twenty-five years ago with those available today to conclude that enormous advances in health technology have been made during the period in question. The extensive network of categorical and non-categorical basic and applied research is certainly the single reason most responsible for advances in health technology. Hence research activities also must be considered a key strength of our system of health care.

Related to both research and technology is the high quality of health professional education in the United States. This is, of course, internationally recognized. While shortages exist in certain types of health manpower (e.g., podiatrists), there exist both large numbers of individuals and a wide range of technical and professional skills involved in health and health related activities. These human resources are also a major strength of our health care system. In spite of occasionally heated inter and intra-professional exchanges of view, it is safe to say that most of the disciplines and occupations enjoy reasonable rapport with each other.

The financing of health care services is one of the more heated policy discussions at present. While pre-paid practice has many advantages, the predominantly available fee-for-service method must also be recognized for provision of a useful degree of flexiblity to our system. A combination of extensive public support for education, research and service combined with private monies derived principally from insurance premiums, fee-for-service and foundations makes the United States health care system one which enjoys a large and relatively stable financial base. In addition, the existing mechanisms of health care delivery and financing in the United States (often referred to by some as a "non-system") provide a great deal of organizational flexibility allowing for growth and change.

Finally, in spite of continuous (and largely appropriate) calls to improve the quality of care, already existing mechanisms derived from a combination of peer review guidelines, professionally recognized private organizations and public regulations have developed many strong quality control systems in the delivery of health care and conduct of health related research.

2. Weaknesses

Even given the important strengths of the health care industry of the United States, a number of rather serious weaknesses also exist. A major problem is that, in spite of large numbers, health workers are maldistributed and often not accessible to many segments of the public such as the poor, minorities, and those living in rural areas. In addition, health care still is delivered largely on a fee-for-service basis sometimes discouraging needed services for the groups noted above. Coordination is frequently lacking and duplication of services and equipment is prevalent. The system also is disease - rather than health - oriented and, therefore, emphasizes crises while awarding patient education a low priority. Costs continue to escalate because of such factors, as well as the fact that no concerted efforts at cost containment exist presently. Further, high malpractice premiums continue to plague the health care industry, and over-utilization is still a problem.

The influence of large industries which provide goods and services to the health care field (e.g., pharmaceutical and scientific medical instrumentation industries) is widespread; their marketing

practices often appear to be strong determinants of what drugs are prescribed and what treatment provided. While many powerful groups exist which have been instrumental in improving the quality of care, there still appears to be much room to develop means to substantially improve the quality of health services. Continuing education activities appear to have increased enormously in the last twenty-five years. These training activities are purported to keep the providers of health care informed about recent advances in their field. However, more needs to be known about both the effectiveness of such educational efforts and the degree to which participants actually benefit in their professional practice. Finally, unethical practices still exist to some extent in all the health professions. Their persistence may often result from concerns that exposing unethical or incompetent practitioners would lead to adverse publicity for an entire discipline.

B. Factors Influencing the Role of the Podiatrist and Their Effect on Podiatric Medical Education

It is evident that many factors are responsible for the evolution of the health care industry. These factors in turn affect the growth and nature of

practice within each of the health disciplines, including podiatry and podiatric medical education.

Financial factors, for example, affect both the practice of podiatry and podiatric medical education. The current and projected state of the economy affects both the practitioners of podiatry and the financial stability of its podiatric educational institutions. The amount of public and private support that podiatric medical institutions, students and faculty can expect to receive is a function of the general state of the economy. Such financial assistance is also affected by the changing attitudes of people toward taxation or support of philanthropic causes.

Health care insurance influences the demand for podiatry and other health services. Both the types of coverage and the types of cost reimbursement employed are significant in this regard. It is obvious that the adoption of a national health insurance program and/or any change in the delivery or organization of health care could have an enormous impact on both the providers and the medical educational institutions. While the entire impact of such changes cannot be accurately predicted, it is safe to say that their effects could significantly modify (1) the number and type of patients available to health professional education; and (2) the income the schools derive from clinical service.

The increase in scientific and technical knowledge and its use in the delivery of care (combined with other factors) have been responsible for the move towards specialization in podiatry. Some of the other factors alluded to above include (1) the availability of clinical privileges in hospitals for podiatrists; (2) significant improvements in inter-professional relationships; and (3) changes in state regulation of the practice of podiatry. Also important to the role of the profession and its schools will be the extent to which podiatry can increase its visibility to the lay and professional public. As a small profession with considerably less visibility than other disciplines, it often has to struggle for appropriate recognition in evolving health programs. This not infrequently leads to a situation which may be referred to as professional "paranoia." How this may affect podiatric medical practice or education is unclear but, if this behavioral state continues to exist, its potential influence should be examined.

The continuous availability of qualified applicants to colleges of podiatric medicine obviously also will have a significant role on how future podiatric medical practice will evolve. Applicant pools are currently declining but the full extend and impact of such declines are not now known. Related to this is the continuing ability of the colleges

of podiatric medicine to generate more career academicians of high quality for new and existing schools, programs, residency activities and serious research projects. Finally, the success or failure of quality controls to assure appropriate levels of care, education and research certainly will have a major impact on future podiatric medical practice and the training requisite thereto.

C. Clarifying the Role of Podiatric Medicine

When attempting to clarify the role of the profession of podiatric medicine, a number of philosophical concepts must be carefully examined and agreed upon. This requires intensive, often highly controversial, discussion by representatives of the colleges and the organized profession. Philosophically, there appears to be agreement within the profession that podiatrists are medical practitioners who enter a specialty at an earlier point than medical doctors. Consequently podiatrists receive a degree and license limited to the specialty. This, however, does not eliminate the requirement that podiatrists have an extensive background not only in local problems of the pedal extremity, but also in general pathophysiology.

While podiatrists participate in the provision of secondary and occasionally tertiary care, the greatest majority of their services probably should be classified as primary care. Some difficulty exists

in defining what the specifics of primary care podiatric medicine are. However, it is reasonable to assume that the term recognizes that the bulk of podiatric patients seek out services directly, without referral from a physician. Thus, the podiatrist may be the patient's first contact with the health care system. In addition, since so many podiatric disorders are chronic in nature, a long term relationship often evolves between podiatrists, patients and (frequently) their families. This often results in a situation in which podiatrists are called upon to provide advice concerning many aspects of health and health care. Frequently, this includes serving as a referring agent to other health care providers. It also should not be overlooked that, because of their long term relationship with patients, podiatrists are often in a position to identify deviations from normal organic and behavioral states. This phenomenon is a result of observing patients over time and performing certain routine health screening procedures periodically. Furthermore, while a significant percentage of practice frequently requires hospitalizing patients, the overwhelming number of those receiving podiatric services do so in an ambulatory care environment. They usually do not require the intervention of large numbers of technical and professional personnel or extraordinarily expensive equipment.

With the increasing expansion of scientific knowledge and technology, the scope of the educational experience in podiatric medicine is in continuous need of reassessment. Part of this on-going assessment is in response to the fact that it is no longer possible for the first professional degree teaching and learning experience to produce a podiatric medical doctor who has acquired all the knowledge and skills intrinsic to the profession. It is agreed that the first professional degree can and should provide students with skills in the prevention, diagnosis and treatment of most of the more common foot disorders. Most important, it should provide the foundation for future self-education or some form of post-graduate experience (e.g., residency or preceptorship).

In the past, education in podiatry beyond the first professional degree, particularly in the context of a residency, was sharply separated from the pre-doctoral program. This was true even if the residency was conducted within or closely associated with a college of podiatric medicine. While this still may be the case today in many respects, there is a growing realization that podiatric medical education is a continuous process beginning in the basic science years and extending until retirement from active practice. How this continuum of education will be considered in the future planning of the podiatric medical curriculum still has not been resolved.

II. CONSIDERATIONS REGARDING CLINICAL EDUCATION

Podiatrists are generally agreed that the profession of podiatric medicine should encompass all forms of diagnostic, preventive and therapeutic procedures directly involving the foot. Of course, some questions (and not infrequently controversies) are introduced when other disciplines (e.g., orthopedic surgery) begin to express deep concerns about podiatry's role. It is particularly in the area of surgery where role conflicts either exist or are perceived. Among members of the podiatric medical profession, however, controversy exists concerning the role of podiatrists in the total health assessment of patients. That is, to what degree should podiatrists perform and interpret general physical examinations? How much responsibility should podiatrists either seek or accept in these areas?

There appears to be a growing consensus among clinical educators in podiatry regarding the minimal level of competency that podiatry students should acquire with regard to the performance and interpretation of the general physical examination. It is believed that upon obtaining the first professional degree, podiatrists should be able to obtain an overall assessment of the physical status of patients. This would require those skills necessary to obtain a total

medical history and an in-depth understanding of its significance to the health status of patients. The assessment should identify deviations from normal through the podiatrist's understanding of general pathophysiology. Those physical examination procedures taught should emphasize the knowledge and skills necessary to perform a routine examination of the heart, lungs, and the neuro-muscular and integumentary systems. At least some attention should also be given, although perhaps not with the same degree of emphasis, to the eyes, ears, nose, throat, abdomen, and the endocrine and urogenital systems.

Agreement appears to exist concerning the fact that the newly graduated podiatrist should be thoroughly capable in the safe use of diagnostic radiological devices. The graduate should be able to position patients for and obtain x-ray views of all parts of the lower extremity as well as interpret them. It is not felt, however, that it is necessary for podiatrists to be able to have the same skills for other parts of the anatomy. It is generally agreed that x-rays of other areas of the body such as the chest, skull, and so forth, should be performed by or under the supervision of radiologists or specialists in these areas of the anatomy. However, the podiatrist should be able to interpret the radiographic reports that are derived from these studies whether they are in written form or given orally while the podiatrist observes the resulting x-ray.

The clinical education of podiatry students also should prepare them to decide when such laboratory studies as blood, urine and tissue examination are indicated, which of the batteries of examinations is appropriate for prescription, and how test results should be interpreted in the light of other clinical findings. This would also include the ability to properly obtain the body fluids or specimens required to conduct these tests. Clinical tradition already assumes that the curriculum would prepare students to interpret the routine urinalysis and such typically ordered blood tests as the complete blood count, bleeding time, blood volume, prothrombin time, sedimentation rate (ESR), hematocrit, hemoglobin, red blood cell measurements (MCV, MCH, etc.) SMA 12-60, postprandial blood sugars, and serological tests for syphilis. Further discussion should take place to determine what additional blood, urine and other laboratory studies might be ordered by the podiatrist in view of the special conditions that podiatric patients may exhibit and which affect the pedal extremity. Consideration should also be given to the determination of those tests which are not used frequently enough in podiatry practice to permit podiatrists to become familiar with their subtleties, and which might be better performed concurrently with, or by referral to, another medical specialist.

III. SETTINGS FOR CLINICAL EDUCATION

A thorough assessment of the setting for clinical instruction is one of the most important factors to take into account in planning efforts designed to develop and implement a clinical curriculum. Clinical educational experiences that take place within facilities owned or administered by the college, typically located within the campus of the institution, are usually referred to as being intramural. Traditionally, the nucleus of the clinical educational program has been the intramural setting. More recently, however, a host of factors have resulted in a marked interest in off campus, or extramural clinical opportunities. Some of the factors responsible for this upsurge of interest include the very rapid expansion of the podiatric medical student body, the need to broaden the type of patient experiences included in the curriculum so as to encompass general medical and surgical conditions, and the need to provide students with an opportunity to participate in the care of the bed-ridden. In addition, extramural clinical experiences open a broad vista of interdisciplinary involvement of dimensions which the existing, free standing colleges of podiatric medicine would find impossible to duplicate.

A. Intramural

Upon close scrutiny, the intramural setting provides a number of advantages to clinical education. When organized departmentally, in addition to getting more concentrated exposure to specific pathological conditions, intramural programs allow for easier assessment of students. This can be accomplished by full time faculty on a day by day or even patient encounter by patient encounter basis. The faculty involved in the educational process in the intramural setting also is generally more accountable since their support usually is derived from the college. Such a faculty usually is better informed and is in a better position to organize and administer the clinical program. In addition, the potential opportunity to conduct research is probably greater in the intramural setting than in most clinical experiences conducted away from the college campus, with the possible exception of an academic health science center.

Among the limitations of intramural clinical education in podiatric medicine, however, is an inability to expose podiatric medical students to a truly interdisciplinary environment. The role of podiatric medicine beyond the walls of a college of podiatric medicine is not easily portrayed, either to the podiatry student or other health professionals. The knowledge which other health professionals obtain concerning

podiatry tends to be limited. The number and types of other health specialists that are found in a school of podiatric medicine are quite limited. This causes a reduction of the degree of learning that can take place in several clinical fields within the intramural setting. The spectrum of diseases, disorders and injuries is usually rather limited. In addition, medical doctors and basic scientists do not find the facilities and other resources in the podiatric medical intramural environments that would attract them to an academic career. Indeed, it is often difficult to attract such professionals to a part time role with a school of podiatric medicine.

B. Extramural

A variety of extramural settings are increasingly becoming available. This greatly extends the clinical exposure received by students. The major extramural clinical education settings include hospitals; the community; and private offices. The colleges of podiatric medicine have a marked tendency to seek out externships, a term which implies a rotation to a hospital or other health care institution. In addition to providing greater exposure to hospital protocol, externships give an opportunity to work with health practitioners and students from many disciplines. Podiatry students are able to witness service delivery models where the provision of care

is coordinated among several specialities. Furthermore, there is exposure to a broad variety of health problems and specialists. This results in a more rounded educational experience in the areas of general medicine, surgery and trauma. The visibility of podiatry to other professions and the lay public is increased; additional opportunities to provide community service are gained.

However, since externships are conducted away from the campus of the college of podiatric medicine, administration. quality control and evaluation may be difficult. This is a result of the logistical problems created by being isolated from the school. Unlike the college clinic, extramural clinical opportunities most frequently do not directly generate income for the college. They may even require an outlay of funds (direct or indirect) to operate the program. It also should be pointed out that, in the case of externships located further than commuting distances, the student would be required to bear costs of transportation in excess of amounts normally or typically encountered. It is also possible that the dimensions of a particular externship may be limited, thus leading to an inadequate clinical experience. Because of distance from the school, such shortcomings might not be readily apparent.

Another extramural clinical setting is the variety of community outreach facilities and programs. This includes such events or activities as health fairs; mass screening tests, specialized populations testing (e.g. children, diabetics, etc.); and public health department work. Depending on the specific program, community outreach activities may increase the student exposure to certain specialized types of problems or patient populations (e.g. aged, children, diabetics, etc.). These activities may sometimes serve as role models for professional acceptance of community responsibility. The amount of visibility obtained by podiatry to medical and lay groups should not be underestimated. Finally, there is great potential for recruiting patients for the college's intramural clinic through the above types of extramural work.

Not infrequently, however, community outreach programs are located in facilities which are less than adequate or even substandard. This is often the case in "free clinics" which may be inadequately funded. In addition, supervision of students may be difficult due to minimal numbers of faculty available at such facilities. For the same reason, it may be difficult to obtain evaluations of either students or the program.

The private office clerkship has become a rather popular clinical teaching experience during the past decade. It is usually set in the office of a private practitioner, which offers the student experience in

the actual conduct of private practices, both in terms of the pathologies presented by patients and the principles of administration and management applicable to the solo practice setting. It offers a one-to-one clinical educational experience in most instances. So far as the college is concerned, clerkships expand the number of clinical faculty at little or no direct cost to the school. The program has the advantage of familiarizing students with potential practice sites. This theoretically could be influential in attracting students to areas in need of podiatrists (e.g., rural areas). As with other clinical education models used in extramural settings, great difficulty may be experienced in quality control and evaluation of the private office clerkship, increased costs to students for commuting may be incurred.

One of the potentially most sophisticated clinical educational settings is the Health Science Center (HSC). Podiatric clinical education closely allied to, or integrated in, an HSC provides the student exposure to greater numbers and more diverse groups of patients, as well as exposure to a broader spectrum of pathological conditions. It may also provide opportunities for sharing such resources as a diverse multidisciplinary faculty, a large medical library, computer facilities, classrooms and laboratories, student health services, business and personnel operations, and the like. The

ability to recruit faculty from medical and basic science disciplines (in addition to podiatric medicine) may be enhanced. The increased visibility and credibility received by podiatry from the lay and professional communities as a result of being part of an HSC is also quite important. The potential for research support and collaboration should also be recognized. The ability of the profession to influence planners and legislators to properly recognize the role of podiatry in the health care field is also enhanced by continuing education and practice in the HSC environment. Models established in one HSC may serve as a means for entry into other health science campuses. A significant advantage of being part of a publicly owned health science center is the ability to establish tuition rates charged to students which are substantially less than full cost (the difference being covered by public appropriations to the institution). Such rates would be much lower than those which private, small colleges are forced to levy (since they must cover all or most costs out of tuition).

Some potential disadvantages may exist, including the possible loss of identity and autonomy of a small, independent profession like podiatric medicine. There is some concern that some portion of the podiatric medical students might successfully transfer to other health professional schools, causing a reduction in total podiatric medical manpower. Because of its

size and complexity, a large bureaucracy may evolve in the HSC which may be difficult or frustrating for the smaller professions to deal with successfully. Finally, it must be realized that becoming part of a health science center does not guarantee automatic acceptance on the part of all schools, departments or individual faculty. It is not inconceivable that breaking down inter-professional barriers could take several years.

IV. CHANGES IN PODIATRIC MEDICAL EDUCATION AND THEIR INFLUENCE ON ESTABLISHING CURRICULA PRIORITIES

The 1970's have seen a remarkable expansion in the number of students enrolled at the colleges of podiatric medicine. During the same period, new educational facilities have been constructed, which have dramatically increased both the size and quality of the physical plants. The five colleges now have a first year enrollment capacity of approximately 623 students. Podiatric medical student enrollment in the United States probably has reached its peak for at least the forseeable future. Further expansion would be unlikely unless completely new schools are established or the existing colleges are able to identify substantial volumes of additional resources.

Perhaps the most significant factor responsible for the recent expansion of the student body at the colleges of podiatric medicine has been the availability of certain Federal funding sources. Key among these are the capitation and construction funds provided by the Health Profession Educational Assistance Acts of the 1960's and 1970's. Special projects grants from the same legislation, as well as funds derived from other public and private sources, have served as catalysts for the evolution of the podiatric medical curriculum.

Major changes have been made in the nature of the basic science curriculum, which resulted in that component of podiatric education becoming quite analogous to that of colleges of medicine. Also, substantial advances were made in clinical education at each of the colleges. This included a broadening of the curriculum in the areas of general medicine and surgery in response to a growing philosophy that podiatrists must be prepared to assess the total health needs of patients. Clinical curricula are now based on the expectation that the podiatrist will identify patients who are in good health, as well as detecting deviations from normal structure and function. More emphasis has been given to the relationships between systemic disorders and signs and symptoms which manifest themselves in the pedal extremity.

Simultaneously, the role of surgery in the profession has increased enormously. There also has been a greatly expanded degree of sophistication in the area of biomechanics. The implications of surgery and biomechanics to podiatric diagnosis and treatment--and hence, clinical education--were remarkably evident. Thus, biomechanical and surgical instruction have become a more significant part of the curriculum. The increase in the use of surgery to deal with podiatric problems led to (1) a dramatic expansion in the number of residency programs; (2) the need for more training in general medicine and surgery; and (3) the requirement by many podiatric surgeons to have available hospital operating rooms and beds. These factors have led to a trend toward expansion of clinical education in the extramural

setting. The philosophy that podiatrists are, in fact, physicians limited by degree and license to disorders of the foot, has initiated great interest throughout the profession in the role of the academic health science center in podiatric medical education and the need for more affiliations with teaching hospitals.

These changes produced expanded requirements for full time faculty. Consequently, total clinical faculty increased from 213 in 1960 (almost all of whom were part time) to 800 in 1978 (279 FTE). However, the resources of the colleges still do not permit them to expand the full time faculty complement to fully meet the existing needs of the clinical curriculum. While there is no intent to eliminate part time and volunteer clinical faculty, too great a reliance still must be placed on such individuals. Because of their other responsibilities (e.g., private practice), part time faculty members are often not able to fill the multiple roles of full time instructional personnel.

The evolution of podiatric medicine to coequality with other health specialists generates many new needs that must be fulfilled by the colleges. One of the most important of these is a detailed examination leading to appropriate definitions of the profession. This should include an analysis of the tasks performed in the field of podiatric medicine and an identification of those tasks which are unique to it.

Another factor to be considered as each college continues its efforts to develop a full time core of academicians is a recognition that faculty often lack formal or informal training in pedagogic and research skills. Nonetheless, the need to fill newly created vacant faculty positions continues to exist. The key factor in hiring will probably continue to be professional skills, but growing recognition will need to be given to the value of educational methodology and instructional experience. In the light of such considerations, a curriculum must be developed in highly specific terms, to provide both teacher and learner with the precise dimensions of required competencies at the various levels of the continuum of podiatric medical education.

Assuming faculty with appropriate expertise in their clinical fields, efforts should be made to help them develop teaching skills encompassing the areas of preparation, presentation and evaluation. If, for example, faculty are to develop a clinical curriculum which is both appropriate to the role of the profession as well as specific enough to be understood by teachers and learners, then they should be given an opportunity to obtain preparation skills such as planning for instruction; skill and content analysis; preparation of instructional objectives; and selecting and preparing instructional media. Faculty also should be provided with training opportunities to help them obtain appropriate presentation skills, such as demonstration and

presentation techniques; techniques of student involvement; and the mechanics and dynamics of questioning. At least as important are the evaluation skills. Skills in developing written tests and conducting performance evaluations also should be acquired by clinical faculty.

V. FACTORS TO BE CONSIDERED IN DEVELOPING CLINICAL CURRICULUM

As has been pointed out, there is a need for detailed analysis of the skills involved in the practice of podiatric medicine. This task should involve the input of groups both external to the college as well as those within the college itself. Some of the external groups might include the American Podiatry Association, the American Association of Colleges of Podiatric Medicine, appropriate federal and state agencies (e.g., Bureau of Health Manpower, the Veteran's Administration, state licensure bodies, etc.), National Board of Podiatry Examiners, state podiatry societies, representatives from other health professional organizations and representatives of the community. Those involved within the college should include the board of trustees, the dean, president and other administrative faculty, the curriculum committee, department or program heads, other faculty and students. Such a broad based group would be helpful in getting some understanding of how the profession is perceived by many publics, each having their own agenda.

These discussions could help arrive at a broad perspective about the role of the profession now and in the future and could help set the stage for a detailed analysis of podiatric medical practice. This analysis should be

comprehensive and precise so that at least some idea about the minimal level of competence believed to be essential to practice podiatry is identified. Key questions to be answered are:

* what minimum fund of knowledge should practitioners possess?
* what kinds of disorders should they be able to diagnose?
* what health problems should they be able to treat?
* what types of diagnostic and therapeutic procedures should they be able to perform?
* what level of skills should be demonstrated in relating to patients, keeping medical records, and so on?

The tasks identified to be included within the practice of podiatric medicine should become part of a dynamic definition for the profession. That is, new tasks continually evolve while existing ones may be modified as the evolution of the profession and the health field continues. The tasks should be described in "behavioral" terms. That is, they should be stated in concrete terms, should consist of observable actions, and as feasible, should be capable of measuring performance. This type of specific, "tangible" task statement is needed to avoid confusing, abstract or hypothetical statements. For the purpose of curriculum development, each task may be referred to as a "terminal objective." An example of a "terminal objective" for clinical training in general physical diagnosis might be the following:

* Terminal Objective

"A student, upon receipt of the D.P.M. degree, should be able to perform a physical examination on an adult male patient, interpret the results and identify normal with 90% accuracy in 10 patients."

Examination of the "terminal objective" shows that it states (1) the conditions to which this objective applies (i.e., normal adult male); (2) the behavior that should be exhibited by the podiatrist (i.e., perform and interpret examination and identify normal) and (3) the measurable criteria necessary for its minimum achievement (i.e., 10 patients, 90% accuracy). Each terminal objective may be further broken down to a number of "enabling" or "intermediate" objectives. For example, for the terminal objective listed above, one "enabling objective" might be the following:

* Enabling Objective

Identify and demonstrate the use of examination instruments using normal subjects (e.g., students with students) with 90% accuracy, including at least a sphygmomanometer, stethescope, ophthalmoscope, and reflex hammer.

Each enabling objective may have several enabling sub-objectives which must be completed to allow achievement of the "main" enabling objective. For example, an enabling sub-objective necessary for achieving the main enabling objective listed above might be:

* Enabling Sub-Objective

"The student will be able to describe the normal

anatomy of the eye and identify from Kodachrome slides the red reflex, normal posterior eye (fundus) including the optic disc, vessels, macula and periphery as well as normal light reflexes and the normal anterior portion of the eye (media) with 75% accuracy."

The educational activities that may be used to attain the various objectives may include didactic instruction (e.g., classroom, textbooks, teaching machines), clinical observation, demonstration, seminars, case studies, specimens (clinical material), laboratory, and appropriate practice experience.

There is considerable analogy to the use of instructioal objectives in an educational institution to the concept of management by objectives employed in industry. That is, many industrial organizations establish specific measurable objectives that they believe should be achieved (e.g., production of a certain number of automobiles within a certain period of time). After establishing such objectives, such industries determine the resources necessary to accomplish them, such as money, manpower, equipment, space, and so forth. The degree to which the objective is achieved serves as a major instrument in evaluating employees at all levels, individual processes, and often a total operation. Objectives which are not realistic are appropriately modified or sometimes abandoned.

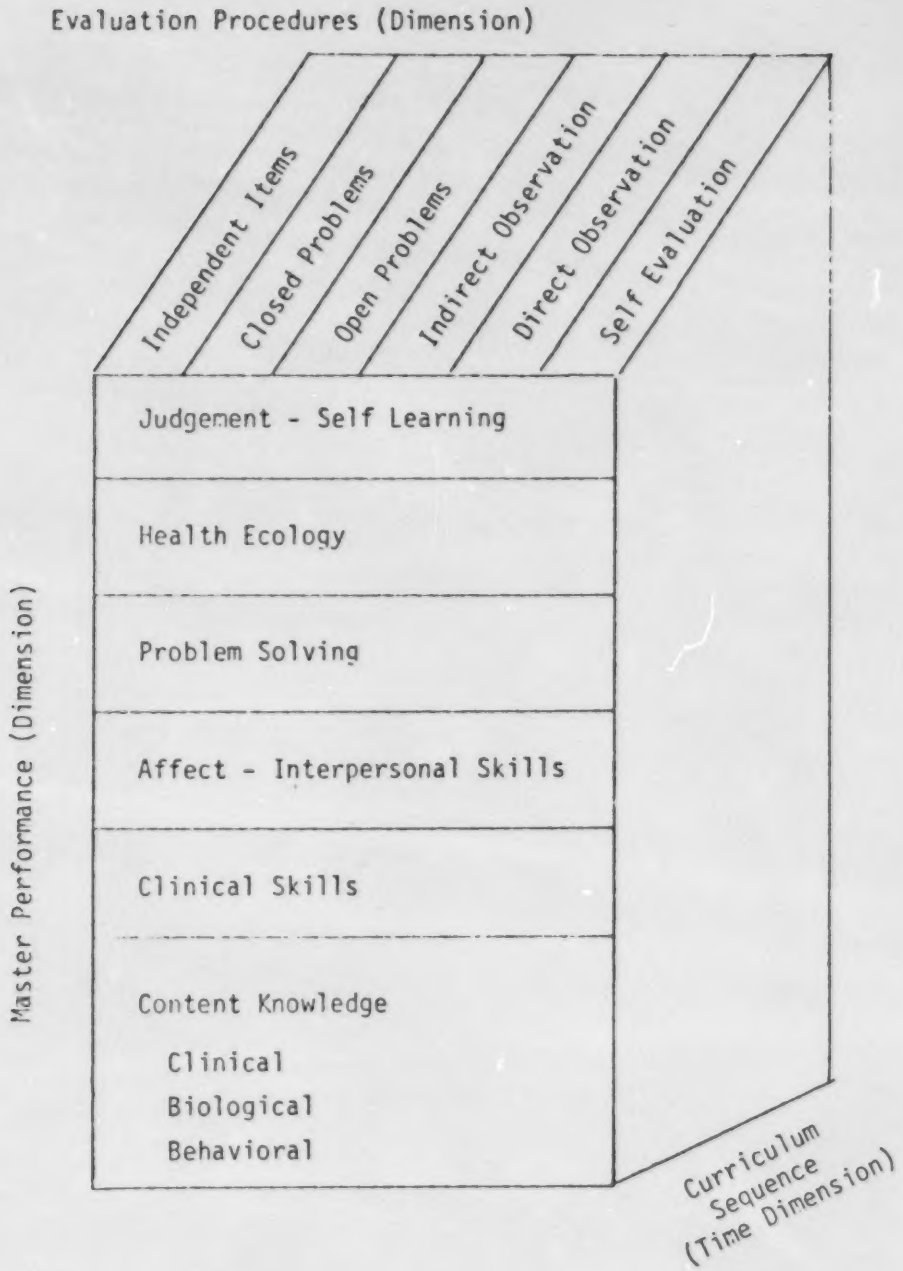
It is important, therefore, to realize that the use of educational objectives does not end with the development of a curriculum. As in the case of objectives established in industry, instructional objectives are useful as a tool which allows a health professional institution to determine the resources it requires to carry out its educational mission. They have a great applicability in long and short range planning including the development of institutional budgets and budget projections. Degree of success in achievement of instructional objectives also may be used as a means for the evaluation of the success of an institution, department, faculty, students or even a specific project. However, the objectives themselves must be continually evaluated and revised to ensure their appropriateness and utility for achieving desired results in clinical instruction.

VI. EVALUATION OF CURRICULUM, STUDENTS AND FACULTY

The complexity of the process involved in the evaluation of students is graphically depicted in the three dimensional matrix shown as Exhibit 1, following this page. The various areas to be evaluated range from judgement to interpersonal skills as well as content and knowledge. As noted in Exhibit 1, a number of different general procedures may be employed to evaluate how successful an individual student has performed in these areas. These include such techniques as traditional, straight forward testing where one item is correct or where several analyses can be made. Also included are observations and evaluations made by students themselves.

An extremely useful evaluation tool employs the concept of problem-oriented medical records. This system consists of four components including the data base, which is essentially the history and examination findings (i.e., physical examination as well as laboratory studies); a problem list derived from the abnormal information obtained from the data base; an initial plan which is designed to solve or alleviate the problems; and progress notes which record the success of the plan and the status of the problem. When used to evaluate students, the "data base" would be those aspects of the student to be assessed, such as problem

Exhibit 1


Evaluation Procedures (Dimension)
Independent Items
Closed Problems
Open Problems
Indirect Observation
Direct Observation
Self Evaluation
Judgement - Self Learning
Health Ecology
Problem Solving
Affect - Interpersonal Skills
Clinical Skills
Content Knowledge
Clinical
Biological
Behavioral
Master Performance (Dimension)
Curriculum Sequence (Time Dimension)

solving and logical skills; cognitive knowledge; technical skills; communication skills; and professional attitudes. The "problem list" would include all shortcomings or negative feedback obtained in any of the above categories. The "initial plan" would be the actions taken by faculty to ameliorate observed problems. The "progress notes" would include current descriptions of the progress and performance of the students.

A number of approaches exist in the evaluation of faculty. A rather comprehensive and convenient method utilizes four classifications. These include (1) presentation and providing skills; (2) questioning skills; (3) attending skills; and (4) teaching styles and attitudes.

"Presentation and providing skills" refer to such areas as whether or not an instructor demonstrates specific clinical techniques, relates educational reading material to a current patient, presents material in a clear, logical, organized manner, refers to the research of others, takes time to check and clarify ambiguous patients, relates general disease concepts to a specific patient, and so forth.

"Questioning skills" include such considerations as faculty asking students how to manage patients, explaining incorrect responses to students, guiding the student to a desired answer with a series of "hints," asking for a problem listing for the patient, questioning students regarding diagnostic tests appropriate to a situation, and the like.

"Attending skills" include such items as preparing for class and student sessions, presenting behavioral, social, family and financial factors in decisions regarding patient management, encouraging students while they are performing procedures, providing frequent feedback on student performance, and currecting mistakes in a positive and constructive way.

"Teaching styles and attitudes" refer to the provision of time for discussion with individual students, conveying a willingness to learn from students, providing a session on an event that just occurred during rounds, encouraging students to give information, admitting the limits of one's own medical knowledge and experiences, and so forth.

VII. INTERPERSONAL SKILLS - A NEGLECTED ESSENTIAL IN THE EDUCATIONAL PROCESS

Traditionally, the podiatric medical student is in a teaching - learning environment which has been exclusively concerned with knowledge conceptualization, technical skills and the like. Little attention is given to such important considerations as emotions, communication, interviewing techniques and other areas which may affect the relationship between patients and doctors or students and faculty. There has been a belief that many of these behavioral skills were too intangible to teach and evaluate and should be relegated to student intuition or to exposure to instructors who were good role models. Interviewing techniques can be taught using various methods such as the viewing of video-tapes by students observing and evaluating their own behavior in an interview with an actual or simulated patient. Television vignettes depicting a number of actual or simulated patients making various statements in interviewing situations also can be extremely useful. These techniques provide the ability to hear verbal responses as well as permit the observation of non-verbal behavior.

The different types of verbal responses that can facilitate communication between students and patients as

well as students and faculty, also can be pointed out by observing a practitioner who is trying to obtain some detailed information from a particular patient. The use of questions which result in minimum verbal responses (e.g., yes and no) may, in many instances, not be as effective as probing, non-leading, open-ended questions which usually would be followed by some sort of detailed communication.

Similar methods can be used in teaching faculty questioning skills. Videotape vignettes of faculty involved with a group of students in a teaching environment can be helpful in pointing out the various ways that a student may be asked a question concerning the same problem. It may also demonstrate the kind of verbal as well as non-verbal response transmitted by the individual student as well as the group.

The development of interpersonal skills should not be relegated to chance. They often determine how well future practitioners will be able to influence their patients so as to encourage cooperation and reduce non-compliance with treatment regimens. Similarly, the efficiency of the teaching - learning situation can be greatly enhanced if faculty are skilled in questioning students as well as in other communication techniques.

VIII. RECOMMENDATIONS DERIVED FROM FACULTY WORKSHOP

A. Defining the Role of Podiatric Medicine

Enormous changes have occurred in podiatric medicine during the last two decades. Many of the responsibilities assumed by the profession have changed, it is, therefore, recommended that:

> there be conducted an articulation of the role of the profession and its relationship to the total health care delivery system of the United States.

Key in such a definition of professional role are the following:

* Leadership The task of defining the role of the profession is complex and time consuming and one for which the individual colleges should assume the leadership.

* Informational Resources Input necessary for such a task should be derived from faculty in concert with college administrations and Boards of Trustees. In addition, input should be sought from private practitioners, the various local and national podiatry societies, students, and such organizations as the Council on Podiatry Education, certifying boards, and specialty groups in podiatry. Whenever possible, representatives from health professional groups outside of podiatric medicine and from the lay public should be involved.

B. Determining the Need for Podiatric Medical Care in the United States

It is recommended that:

> an in-depth study of the incidence and prevalence of disorders affecting the foot be undertaken at the earliest possible date.

The study should be conducted by the profession of podiatric medicine (i.e., American Podiatry Association, in cooperation with the American Association of Colleges of Podiatric Medicine), with the support of appropriate federal and state agencies. This study should encompass all segments of the population (e.g., various age, ethnic and socio-economic groups) and should help determine the need for health care providers at all levels for the delivery of comprehensive, high quality podiatric care. The clinical facilities of the five colleges of podiatric medicine could serve as the points for coordinating a pilot project in this area.

C. The Need for Health Science Center Affiliation by the Podiatric Medical School

The growth of podiatric medicine has led to the assumption of responsibilities which require closer relationships with many different kinds of health professionals. Along with this have been curricular changes which have produced courses of study in all of the colleges of podiatric medicine that have much

in common with significant components of the curriculum of medical schools. Many of the facility needs and supportive service requirements required to conduct podiatric medical education are either identical or quite similar to those found in other health professional programs. It is recommended, therefore, that:

> the podiatric medical college presidents and their respective boards of trustees accelerate their investigation concerning opportunities that may become available regarding affiliations with academic health science centers.

Such affiliations could lead to the sharing of physical and human resources, more efficient utilization of finances and the availability of programs and interdisciplinary opportunities not readily available to the free-standing colleges of podiatric medicine. The added credibility that the colleges and the profession would acquire as a result of affiliations with health science centers cannot be overestimated. In addition, faculty in both the basic and medical sciences, previously not easily available to the colleges, could more readily be acquired.

D. The Role and Responsibilities of Faculty Members of Colleges of Podiatric Medicine

It is recommended that:

> the role and responsibilities of faculty within a college of podiatric medicine be clarified and then fully supported by the administration of each college of podiatric medicine.

Podiatric medical faculty today are not only

teachers but also clinicians, counsellors, researchers, managers, practitioners and members of the faculty governance within the college. These varied activities need to be defined, recognized and supported by the college with human and physical resources. Space and time need to be provided for research. In other words, faculty members must be assisted in recognizing their responsibilities and be given the necessary support to carry out those activities.

E. The Podiatric Medical Curriculum and Its Relationship to the Role of the Profession

In view of the enormous number of changes that have occurred in the profession, the dimensions of the podiatric medical curriculum have been strained in many directions. Clarification of the relationship of the clinical curriculum to professional practice is needed. It is recommended that:

> the American Association of Colleges of Podiatric Medicine provide the leadership for the development of a study of the curriculum in relationship to the role of podiatric medicine.

This study should develop a model curriculum for the colleges of podiatric medicine which appropriately reflects the role of the profession in the health care system. The following

principles would guide conduct of the study.

1. The curriculum would be competency-based. At a national level there would be agreement as to what minimum level of knowledge and skills would be required to obtain the degree of Doctor of Podiatric Medicine.
2. The project should not usurp the individuality of the colleges. Therefore, what would result should be a model that each college could use as a core around which an individualized curriculum would be developed. This would permit curricula experimentation and allow the colleges to develop programs in areas where they have particular strengths.
3. A complete set of objectives should be developed in highly specific behavioral terms. This should be followed by an examination of the teaching and learning environments that would be necessary to achieve the objectives. They should also be developed in terms that identify the role of self-instruction in order to cultivate the habit of life-long learning among students. In addition, special attention should be given to the establishment of a number of instruments that could be used to evaluate the total clinical curriculum, its individual components and the student.

F. Post Graduate Education

Residency education in podiatric medicine no longer is a luxury sought by few graduates as they complete the D.P.M. program. As a result of evolution it has been declared a necessity as demonstrated by the fact that more than 90% of all graduates apply for a residency position and that the number of residency positions in podiatric medicine during the last decade has increased in geometric proportions and continues to do so today. Most residency programs, however, have developed in isolation from any coordinated system (with the exception of the guidelines established by the Council on Podiatry Education). Although these guidelines have done much to assure certain minimal levels of quality for podiatric medical residencies, there is still considerable unevenness in the programs. This is particularly noticeable when trying to determine what each student intends to accomplish and how he expects to get it from a residency. It is recommended, therefore, that:

> the American Association of Colleges of Podiatric Medicine and the Council on Teaching Hospitals accept the responsibility for establishing specific objectives for podiatry residency programs at each level (i.e., first, second, third year) and guidelines as to how these objectives may be reached.

Residency programs should begin to be more carefully examined as to how they may be more efficiently integrated as part of the continuum of podiatric medical education.

G. Podiatric Medical Education Methodology

The volume of knowledge and skills required for podiatric medical practice continues to increase. More efficient teaching and learning methods are becoming increasingly important. With relatively few schools in the profession and limited resources, the colleges of podiatric medicine should consider pooling their efforts to develop a centralized office of podiatric medical education at the Headquarters of the American Association of Colleges of Podiatric Medicine or in one of the colleges. This office could help develop such resources as:

1. Faculty in-service education concerning curriculum development, student evaluation, teaching and learning methods, and the like.
2. Assessment techniques for students and faculty.
3. Resource persons to provide technical assistance in planning, developing and evaluating the curriculum at each of the colleges.
4. Educational research in podiatric medical colleges to identify new teaching and

learning skills and assessment processes.

It is recommended, therefore, that:

> The Colleges of Podiatric Medicine undertake efforts to define an appropriate mechanism and obtain resources for the overall improvement of Podiatric Medical Education Methodology.

H. Performing a Resource Analysis Within the Colleges of Podiatric Medicine

It is important that each of the colleges be in a position to know its specific capabilities so that its long and short range planning efforts will be reasonable and those resources required for the future can be more readily identified. In order to achieve this capability, it is recommended that:

> a self analysis be undertaken by each college which describes its human, physical and financial resources in highly specific terms.

IX. SUGGESTED PLANS FOR THE IMPLEMENTATION OF RECOMMENDATIONS

The primary faculty felt that the clinical faculty workshop produced several recommendations of potentially far reaching significance to the profession and its educational activities. As a result, after considerable discussion, they developed an outline for a plan to implement the recommendations over a three year period. This plan simultaneously prepares faculty to adopt and accept any changes that might result. The primary faculty felt that this was essential in order to comply with the planning objective included in the technical proposal for the workshop "To develop general plans and schedules for implementation of workshop recommendations which may be accomplished within the profession and recommend plans and schedules for implementation of initiatives suggested for the federal government . . . ." The implementation plans and schedules are delineated in the charts which follow.

Exhibit 2

SUGGESTED OUTLINE OF A PLAN FOR THE IMPLEMENTATION OF THE RECOMMENDATIONS DERIVED FROM THE FACULTY WORKSHOP ON CLINICAL INSTRUCTION FOR PODIATRIC MEDICAL EDUCATION

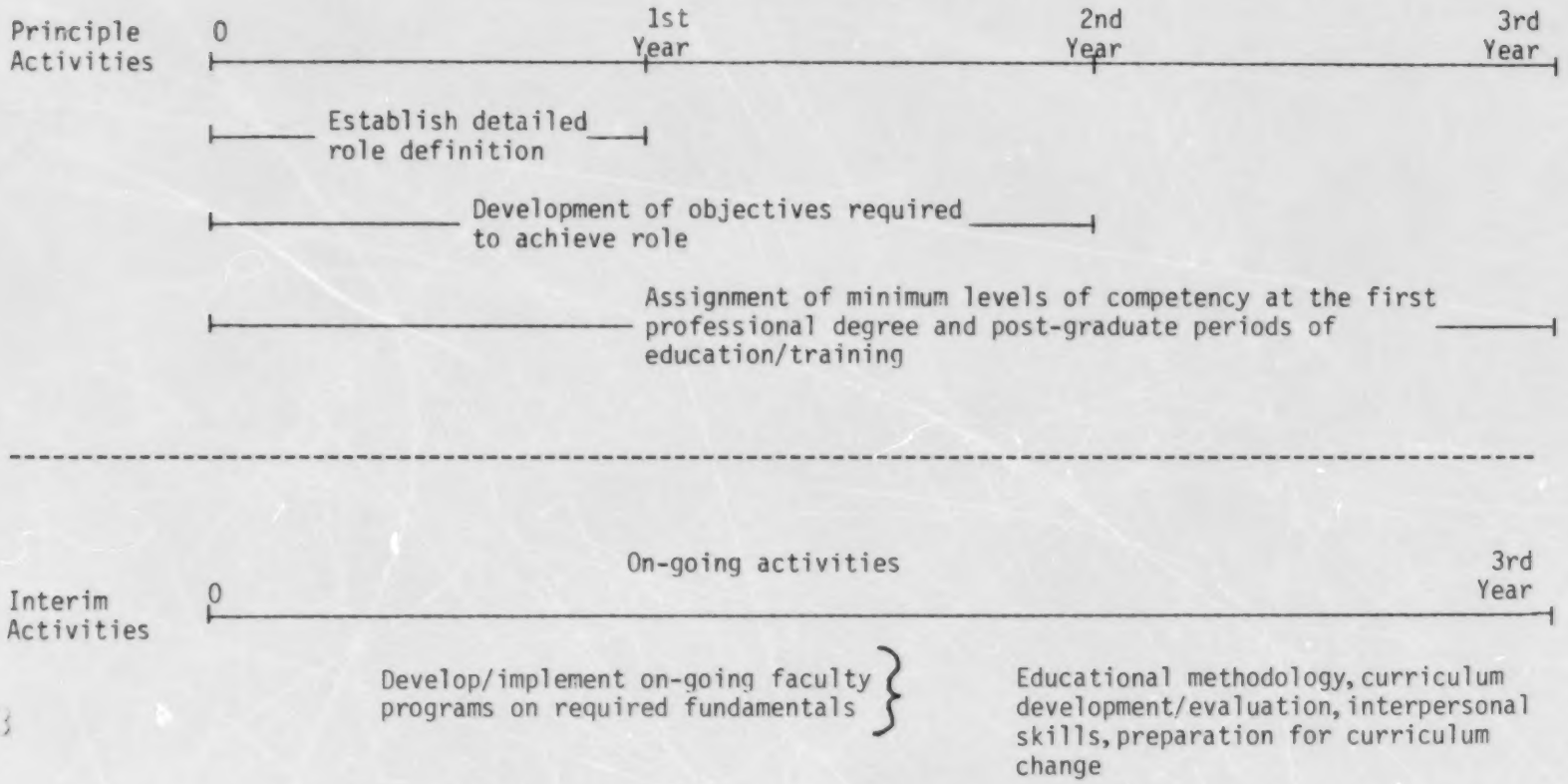
Recommendation	Suggested Plan	Responsible Persons or Groups	Time Schedule	Potential Sources of Financing
a. Defining Role	Implement a nation wide podiatric medical curriculum study	Representatives of the American Podiatry Association, Council on Podiatry Education, National Board of Podiatry Examiners, American Association of Colleges of Podiatric Medicine, American Board of Podiatric Surgery, Academy of Ambulatory Foot Surgery, deans and faculty	1980-81	American Podiatry Association Board of Trustees, Academy of Ambulatory Foot Surgery, American Board of Podiatric Surgery, National Board of Podiatry Examiners, contributed time by colleges
b. Determining Need for Podiatric Medical Care	To be developed by the American Podiatry Association staff	American Podiatry Association and the American Association of Colleges of Podiatric Medicine	1980-81	American Podiatry Association/American Association of Colleges of Podiatric Medicine with funding via contract with Health Resources Administration and/or private foundations
c. Health Science Center Affiliation	College presidents to prepare a report on present status and projections	American Association of Colleges of Podiatric Medicine with individual colleges	On-going: Chief Administrative officers report to American Association of Colleges of Podiatric Medicine, June, 1980	Incentives for health science center to establish school of podiatric medicine are needed. These should be derived from governmental or private sources
d. Role and Responsibility of Faculty	American Association of Colleges of Podiatric Medicine Annual Meeting Workshop	American Association of Colleges of Podiatric Medicine	Annual meeting of American Association of Colleges of Podiatric Medicine - 1980, 1981, 1982	Individual colleges

Exhibit 2, Continued

Recommendation	Suggested Plan	Responsible Persons or Groups	Time Schedule	Potential Sources of Financing
e. Competency Based Curriculum	Devise competency based curriculum	Combine with the implementation of recommendation #1	1980-83	See #1
f. Postgraduate Education	Workshop by members of the Council on Teaching Hospitals under auspices of the American Association of Colleges of Podiatric Medicine	Council on Teaching Hospitals leadership, Council on Podiatry Education, American Board of Podiatric Surgery, Amercian Board of Podiatric Orthopedics, Academy of Ambulatory Foot Surgery	1980 American Podiatry Association or American Association of Colleges of Podiatric Medicine Annual Meeting	Government contract or grant and/or Academy of Ambulatory Foot Surgery, American Board of Podiatric Surgery, American Board of Podiatric Orthopedics
g. Educational Methodology	Establish an office on podiatric medical education within the American Association of Colleges of Podiatric Medicine with staff of two professionals	American Association of Colleges of Podiatric Medicine	1980-83	Incorporate programs in the annual meeting and at individual colleges; obtain small college contributions for establishing a central office for podiatric medical education
h. Resource Analysis	Report to the American Association of Colleges of Podiatric Medicine by each college	Boards of Trustees at each college	1981 American Association of Colleges of Podiatric Medicine Annual Meeting	Existing college funds

Exhibit 3

TIME LINE FOR ACHIEVEMENT OF CLINICAL FACULTY WORKSHOP
PRINCIPLE RECOMMENDATIONS AND ASSOCIATED ACTIVITIES


Principle Activities
0
1st Year
2nd Year
3rd Year
Establish detailed role definition
Development of objectives required to achieve role
Assignment of minimum levels of competency at the first professional degree and post-graduate periods of education/training
Interim Activities
On-going activities
0
3rd Year
Develop/implement on-going faculty programs on required fundamentals
Educational methodology, curriculum development/evaluation, interpersonal skills, preparation for curriculum change

X. EVALUATION OF THE FACULTY WORKSHOP BY THE PARTICIPANTS

Evaluation forms were distributed to each of the participants at the beginning of the conference and were collected at the end of the last workshop session. The participants were instructed to rate the component parts of the workshop on forms which allowed them to evaluate the topics that were presented and the presenter as well as provide open-ended comments and suggestions. A similar form also was provided for the participants which attempted to obtain information for the evaluation of the conference as a whole. These evaluation forms permitted ratings on a 5 point scale ranging from poor (1) to outstanding (5).* Each component of the evaluation forms was analyzed by determining the modal average. The use of the mode rather than the mean was considered to be more appropriate in the analysis of this data. The mode for each component of the faculty workshop was then summarized by calculating a modal average and the comments of the participants were summarized.

When examining the evaluations of each of the component parts of the faculty workshop, it was noted that there was a range which extended from 3.75 - 5.00 when looking at

* See Exhibits 4 and 5 on the following pages.

A FACULTY WORKSHOP ON CLINICAL INSTRUCTION FOR PODIATRIC MEDICAL EDUCATION

WORKSHOP SUMMARY EVALUATION FORM

CATEGORY DATA

POSITION OR TITLE: _____ DEGREES (D.P.M., Ph.D., Ed.D., M.P.H.) _____

IDENTIFY SMALL GROUP WORK SESSIONS ATTENDED:

DAY 1: _____, DAY 2: _____

DAY 3: _____, DAY 4: _____

SIGNATURE (OPTIONAL) _____

CONFERENCE RATING *Please rate each characteristic of the workshop along the 5-point scale illustrated. Darken the "bubble" which most closely approximates your opinion of the characteristic being rated.*

	POOR	FAIR	AVERAGE	GOOD	OUTSTANDING
	1	2	3	4	5
THE TOTAL WORKSHOP	O	O	O	O	O
THE FACULTY	O	O	O	O	O
SUBJECT MATTER:					
DAY 1	O	O	O	O	O
DAY 2	O	O	O	O	O
DAY 3	O	O	O	O	O
DAY 4	O	O	O	O	O
PRESENTATION/TEXT HANDOUTS	O	O	O	O	O
AUDIOVISUALS	O	O	O	O	O
MEETING ROOM PREPARATION	O	O	O	O	O
THE TOTAL FACILITY	O	O	O	O	O
GENERAL ORGANIZATION AND LOGISTICS	O	O	O	O	O

COMMENTS *(Was there anything you particularly liked or disliked?)*

EXHIBIT 5

A FACULTY WORKSHOP ON CLINICAL INSTRUCTION FOR PODIATRIC MEDICAL EDUCATION

INDIVIDUAL PRESENTATION EVALUATION FORM (DIDACTIC MODULES)

1. MODULE IDENTIFICATION

1.1 DAY/DATE: _____ 1.2 TIME ____ _____

1.3 PRESENTER(S) _____

1.4 TITLE/TOPIC _____

2. TOPIC EVALUATION (*note: please darken the appropriate "bubble" to indicate your rating*)

ITEM	RATING				
	POOR	FAIR	AVERAGE	GOOD	OUTSTANDING
2.1 INTEREST TO YOU	0	0	0	0	
2.2 RELEVANCE TO YOUR SCHOOL	0	0	0	0	0
2.3 POTENTIAL FOR USE IN YOUR SCHOOL	0	0	0	0	0
2.4 UTILITY OF ASSOCIATED SMALL GROUP WORK SESSION	0	0	0	0	0

3. PRESENTER EVALUATION

ITEM	RATING				
	POOR	FAIR	AVERAGE	GOOD	OUTSTANDING
3.1 PRESENTER'S STYLE & ARTICULATION	0	0	0	0	0
3.2 GRASP OF SUBJECT	0	0	0	0	0
3.3 USE OF WORKING MATERIALS (e.g., A/V, Curriculum Materials, etc., if appropriate)	0	0	0	0	0
3.4 PRESENTER'S IMPACT ON YOU	0	0	0	0	0

4. COMMENTS AND SUGGESTIONS

Modal Means: Total Session: 87 Topic: Presenters:

each session as a whole. The same range existed when determining the opinions of the participants on the topics selected for each of the sessions. There was only a slight difference in the range in the evaluation of the presenters for each component of the faculty workshop in that the range extended from 3.5 - 5.0. It had been the goal of the contractors that a modal average be achieved ranging from 3.25 - 3.75. This was more than achieved in each component of the faculty workshop according to the information obtained from the participants.*

It was the consensus of the group that the conference was extremely well organized and examined pertinent topics which were covered smoothly and effectively. The one improvement suggested was that there should have been more time allocated for discussion and workshops.

* See Exhibit 6 on the following page.

Exhibit 6

EVALUATIONS OF INDIVIDUAL WORKSHOP SESSIONS*

A. Total Session

5.00
4.75
4.50
4.40
4.30
4.25
3.75
Average - 4.42

B. Topic

5.00
4.80
4.75
4.50
4.50
4.25
3.75
Average - 4.51

C. Presenters

5.00
4.75
4.50
4.50
4.00
4.00
3.50
Average - 4.32

* Listed from highest to lowest rating.

Appendix A

PROGRAM AGENDA

A Faculty Workshop on Clinical Instruction for Podiatric Medical Education

FACULTY WORKSHOP ON CLINICAL INSTRUCTION
FOR PODIATRIC MEDICAL EDUCATION

CURRICULUM AGENDA

DAY ONE: WEDNESDAY

MARCH 21, 1979

Time	Session Type	Topic	Presenter
9:00-9:10a.m.		Introduction/Orientation	John C. Muntone, Ed.D.
9:10-10:15a.m.	Didactic I	Directions of Health Care System - Potential Effects on Health Professions Education and Training	Sol Bernstein, M.D., Leonard A. Levy, D.P.M., M.P.H.
		Evolving Role of the Podiatrist	Harvey Lemont, D.P.M.
10:15-10:30a.m.	Coffee Break		
10:30-12noon	Workshop	How are we going to determine the present and future role of Podiatry?	Leonard A. Levy, D.P.M., M.P.H. Charles W. Gibley, Jr., Ph.D. Richard Baerg, D.P.M., M.P.H. Harvey Lemont, D.P.M.
12:00-12:30p.m.	Recapitulation	Summarize Workshop Session	Leonard A. Levy, D.P.M., M.P.H. Charles W. Gibley, Jr., Ph.D. Richard Baerg, D.P.M., M.P.H. Harvey Lemont, D.P.M.
12:30-2:00p.m.	Luncheon		
2:00-3:30p.m.	Didactic II	D.P.M. Clinical Curriculum Today-An Analysis	Richard Baerg, D.P.M., M.P.H.
		Responsibilities of Podiatric Medical Colleges at the D.P.M. Level	Charles W. Gibley, Jr., Ph.D.

Day One: Wednesday, March 21, 1979, continued

Time	Session Type	Topic	Presenter
2:00-3:30p.m.cont'd	Didactic II	Considerations in Determining the Settings in Which Clinical Education is Provided	Robert Ballard, D.P.M.
3:30-3:45p.m.	Coffee Break		
3:45-5:15p.m.	Workshop	What are the educational components required of the D.P.M. program in view of the role of Podiatry and the demands of society?	Leonard A. Levy, D.P.M., M.P.H. Charles W. Gibley, Jr., Ph.D. Richard Baerg, D.P.M., M.P.H. Harvey Lemont, D.P.M.
5:15-5:45p.m.	Recapitulation	Summarize Workshop Session	Leonard A. Levy, D.P.M., M.P.H. Charles W. Gibley, Jr., Ph.D. Richard Baerg, D.P.M., M.P.H. Harvey Lemont, D.P.M.
5:45-6:45p.m.	Daily Synthesis	Primary Faculty and Recorders meet to summarize entire day's session	

DAY TWO: THURSDAY

MARCH 22, 1979

Time	Session Type	Topic	Presenter
9:00-10:00a.m.	Didactic III	A Rationale for Competency Based Curricula for Educating and Assessing Health Professionals	John Mather, M.D.
10:00-10:30a.m.	Didactic IV	Primary Care Podiatric Medicine - A Modified Task Analysis	Leonard A. Levy, D.P.M., M.P.H.
10:30-10:45a.m.	Coffee Break		
10:45-11:45	Didactic IV continued	The Use of Task Lists, Task Analyses and Behavioral Objectives in Developing a Competancy Based Clinical Curriculum	Arlene Barro, Ph.D.
		Development and Use of Behavioral Objectives	Maurice Levy, Ed. D.
11:45-Noon	Coffee Break		
12:00-1:15p.m.	Workshop	Developing task lists, task analyses and behavioral objectives for the establishment of competancy based clinical curricula	Overall Leader: - A. Barro, Ph.D. Group Leaders: - F. Ganis, Ph.D. - M. Levy, Ed.D. - L. Gabel, Ph.D. - Primary Faculty
1:15-2:30p.m.	Luncheon		
2:30-6:00p.m.	Unstructured Time		
6:00-7:30p.m.	Dinner		

Day Two: Thursday, March 22, 1979 continued

Time	Session Type	Topic	Presenter
7:30-8:30p.m.	Didactic V	Preparing Faculty to Provide Effective Clinical Demonstrations	Lawrence Gabel, Ph.D.
		Evaluation of Students in the Clinical Clerkship	Maurice Levy, Ed.D.
8:30-9:30p.m.	Workshop A	Developing a Sample Evaluation of Faculty Effectiveness in Clinical Teaching	Lawrence Gabel, Ph.D.
	Workshop B	Developing an Example of an Evaluation for Students in a Clinical Clerkship	Maurice Levy, Ed.D.
9:30-10:00p.m.	Recapitulation	Summarize Workshop Session	Leonard A. Levy, D.P.M., M.P.H. Charles W. Gibley, Jr., Ph.D. Richard Baerg, D.P.M., M.P.H. Harvey Lemont, D.P.M.
10:00-11:00p.m.	Daily Synthesis	Primary Faculty and Recorders meet to summarize entire day's session	

DAY THREE: FRIDAY

MARCH 23, 1979

Time	Session Type	Topic	Presenter
9:00-10:15a.m.	Didactic VI	Teaching the Use of Problem Solving Models in Medical Education	Cherry Turner, Ed.D.
		Teaching and Assessing Interpersonal Skills	Paula Horvatich, Ph.D.
10:15-10:30a.m.	Coffee Break		
10:30-12noon	Workshop A1	Problem Solving Methods Used in Teaching Physical Diagnosis	Cherry Turner, Ed.D.
	Workshop A2	Teaching and Assessing Interpersonal Skills	Paula Horvatich, Ph.D.
12:00-1:30p.m.	Luncheon		
1:30-3:00p.m.	Workshop B1	Teaching and Assessing Interpersonal Skills	Paula Horvatich, Ph.D.
	Workshop B2	Problem Solving Methods Used in Teaching Physical Diagnosis	Cherry Turner, Ed.D.
3:00-3:30p.m.	Recapitulation	Summarize Workshop Sessions	Leonard A. Levy, D.P.M., M.P.H. Charles W. Gibley, Jr., Ph.D. Richard Baerg, D.P.M., M.P.H. Harvey Lemont, D.P.M.
3:30-4:50p.m.	Didactic VII	Mechanics and Dynamics of Questioning Students	Lawrence Gabel, Ph.D.
4:50-5:50p.m.	Daily Synthesis	Primary Faculty and Recorders meet to summarize entire day's session	

DAY FOUR: SATURDAY

MARCH 24, 1979

Time	Session Type	Topic	Presenter
9:00-10:30a.m.	Panel Discussion	Overall Summary of daily sessions and proposed recommendations	Moderator: - John C. Muntone, Ed.D. Panel: - R. Baerg, D.P.M., M.P.H. - L. Levy, D.P.M. - C. Gibley, Jr. Ph.D. - H. Lemont, D.P.M. - S. Bernstein, M.D. - J. Mather, M. D.
10:30-10:45	Coffee Break		
10:45-Noon	Group Synthesis	Where do we go from here?	Group Discussion
12:00-12:15p.m.	Adjournment		John C. Muntone, Ed.D.
12:15-1:45p.m.	Luncheon		

Appendix B

PRIMARY AND ADJUNCT FACULTY PAPERS

FOR THE

FACULTY WORKSHOP

FORMAL PAPERS PRESENTED AT THE FACULTY WORKSHOP

A. A View of Our Evolving Health Care System and Its Impact on Education and Training, Sol Bernstein, M.D. 64

B. Directions of the Health Care System - Potential Effects on Podiatric Medical Education, Leonard A. Levy, D.P.M., M.P.H. 71

C. The Evolving Role of the Podiatrist, Harvey Lemont, D.P.M. 79

D. The D.P.M. Clinical Curriculum Today: An Analysis, Richard H. Baerg, D.P.M., M.P.H. 87

E. Responsibilities of Podiatric Medical Colleges, Charles W. Gibley, Jr., Ph.D. 104

F. Considerations in Determining the Settings in Which Clinical Education is Provided, Robert G. Ballard, D.P.M. 120

G. A Rationale for Competency Based Curricula for Educating and Assessing Health Professionals, John Mather, M.D. 128

H. A Modified Task Analysis of Primary Care Podiatric Medicine, Leonard A. Levy, D.P.M., M.P.H. 154

I. Developing a Competency-Based Model and Its Implications for Podiatric Medical Education, Arlene R. Barro, Ph.D. 184

J. Development and Use of Behavioral Objectives, Maurice Levy, Ed.D. 193

K. Preparing Faculty to Provide Effective Clinical Demonstrations, Lawrence L. Gabel, Ph.D. 200

L. The POMR Concept as a Guideline for Educational Evaluation of Students in a Clinical Setting, Maurice Levy, Ed.D. 208

M. Teaching Problem Solving in Medical Education or Unraveling the Magical Mystery Tour, Cherry McPherson-Turner, Ed.D. 215

N. Teaching and Assessment of the Interpersonal Skills of Interviewing, Paula Horvatich, Ph.D. 235

O. Questioning: Mechanics and Dynamics, Lawrence Gabel, Ph.D. 256

A VIEW OF OUR EVOLVING HEALTH CARE SYSTEM AND ITS IMPACT ON EDUCATION AND TRAINING

SOL BERNSTEIN, M.D.
MEDICAL DIRECTOR
LOS ANGELES COUNTY-UNIVERSITY OF
SOUTHERN CALIFORNIA MEDICAL CENTER

PRESENTED AT THE FACULTY WORKSHOP ON CLINICAL INSTRUCTION IN PODIATRIC MEDICAL EDUCATION TO BE HELD IN COLUMBUS, GEORGIA ON MARCH 21, 1979

DIDACTIC I

As we look toward the beginning of the twenty-first century, it is not uncommon to wonder what changes will unfold and what form health care delivery will take. There are as many opinions as there are people to express them and as is often the case, few experts agree on the direction we should pursue.

I personally do not claim expertise in future planning, but my years in the practice of medicine and as medical director of a large public teaching institution have afforded insights into the problems that must be addressed and recognition of the constraints that we are forced to operate within.

In January, Washington sources indicated that the cost of medical care in the United States was growing by $1,000,000 an hour and would double in five years. This spiraling cost presages intervention. If we are to properly address the health needs of our society without increasing government controls, we must reorganize ourselves into more efficient units of delivery. We must recognize that the past represents an attempt to meet health requirements in a different social and economic structure than the present and that the future must retain the best that has gone before and build for a new and more complex society.

A significant portion of this increasing cost can be attributed to a growing dependence on hospitals with increasing numbers of beds and increased complexity of diagnostic and therapeutic technology. In addition, the larger numbers of elderly in association with the ever present segment of our population that has always been underserved due to lower socio-economic status have necessitated larger numbers of highly skilled health providers to meet the needs of this diverse population and man the burgeoning numbers of facilities developed to provide this service.

A look at history makes this inevitably clear. Hospitals as we know them today are a far cry from their beginnings in Britain of the 1700's. Poor farms or almshouses were developed to replace "outdoor relief" which was the provision of payments to the poor in their squalid homes. These indoor workhouses (poor farms) were set up to overcome the concept of idleness begetting poverty. Since some of the poor, the sick, the aged, orphans, and mentally ill were unable to work, portions of the workhouses were set up to shelter them and small infirmaries were established. These almhouse infirmaries were pest holes where the sick, aged, and dying were indiscriminately mixed.

In time, however, these infirmaries became the foci for medical education, an important beginning. It was recognized that there was considerable opportunity for repeated observations of symptoms and the course of disease. Successful treatment of one patient could be tried on another and results could be observed. The provision of service and the opportunity to learn had an interesting beginning.

It is not strange then that colonial America should utilize this legacy of Elizabethan poor laws in the 18th century and establish hospitals as extensions of the almshouse for the relief of the poor. As later County and City institutions for the sick appeared, they rapidly evolved into acute care general hospitals, providing episodic care only. Care of the ambulatory poor was provided in independent dispensaries. Hospital outpatient services were not available and are in reality a modern practice. It is of interest to note that organized care in hospital and/or dispensary settings was essentially established for the poor and thus not accessible to those of means because of the social stigma.

Times have changed, however, and the urban or rural hospital has become the core of the american health delivery system. There has been little emphasis in the modern day on preventive health or ambulatory services. The emphasis still remains with the acutely ill.

Our burgeoning economy has provided an enormous amount of money to the health care system. There has been an increase in training and in the numbers of doctors, nurses, and the development of allied health professions. There are increased numbers of beds, of people in medical research, and a mind-boggling availability of advanced technology. All of the efforts have caused a rise in the cost of health care delivery, but few specific changes in overall longevity or incidence of disease other than those attributable to the development and use of antibiotics and the availability of immunization procedures.

Health care now consumes a considerable portion of the budgets of government, corporations, and individuals and yet we are faced with duplication of services, a maldistribution of resources and as usual, significant segments of our population receive inadequate medical attention.

And where have we come in the field of education? Medical training began originally in one-to-one relationships. From these preceptorships, we evolved into organized schools and basic curricula. The association of schools with clinical teaching facilities led to the utilization of hospitals for the acutely ill where the major emphasis was on treatment of the poor and indigent. Thus students gained their experience with those patients who were in dire need of medical care. The other side of that coin of course being that without these students and schools, there would be no modicum of care for those without private sources. As the number of schools, students, and hospitals expanded the number of private and public hospitals with special training programs increased, the emphasis remained on acute episodic care with little concern for ambulatory services or preventive medicine.

The emphasis on specialization began - where doctors moved rapidly away from general practice toward areas of greater specialization and subspecialization. Only now has the pendulum swung back to a greater interest in primary care. Allied health professionals too were caught up in this need to achieve excellence in limited areas of expertise. Thus, we find increasing numbers of nurses attracted to primary care, or critical care or serving as practitioners in neonatal units and pediatric clinics. We find a greater trend towards pharmacists working in a hospital-based clinical environment, involved in counseling and pharmacokinetic assessment. Your own profession, podiatric medicine, is leaning more strongly toward specialization as the emphasis in organized medicine returns to more family orientation and primary care.

Some degree of limited specialization is important as technology requires a certain degree of capability and experience. On the other hand, podiatry itself is a specialized area of health care dealing primarily with a portion of the body involved in locomotion. To become superspecialized in that narrow field may not be to the benefit of the profession or more importantly, to the patients you are dedicated to serve. Pure podiatry provides expertise that few others can deliver or duplicate. Emphasis on surgery or medicine may be more detrimental to the development of the profession.

The specialization of what were once acute general hospitals to orthopedic, eye, cancer, maternity, and cardiac institutions has fed this proliferation. Only now are we again beginning to see a trend toward multi-level hospitals with primary care capability and super specialized services available in the same environment.

This return to sanity can only aid in improved educational opportunity for the health professions. The best area of education is still in the larger hospital with multi-faceted programs - providing an interchange of ideas between students and faculty. Interdisciplinary training with attendings and students attending conferences together and with expertise of other disciplines always available, allows for interchange of ideas and provides a broad spectrum of information that can only enhance knowledge and understanding of clinical information. There should now, however, be a strong emphasis and concern with the ambulatory care setting. We can no longer be soley chained to the hospital environment. There must be field work and cooperative affiliations between the professional schools and organized clinics, HMO's and hospital. Whatever the configuration of health care will be, we must assure that

our professionals receive both hospital based and non-hospital based experience. Regardless of the change in dollars available for health care or education, a major part of this training will remain in experiences with the poor and the near-poor because of their continuing need.

What does the future hold and how can podiatry become an intrinsic part of it? In order to meet the challenges of the 21st century, we must first see that the education and training of podiatrists become more closely allied with medicine. First, there must be continuing emphasis on the basic science curriculum in both podiatric and medical schools. Perhaps sharing of classroom space and faculty to reduce costs and assure a closer association between the professions can be achieved. Second, there must be more clinical experience with patients presenting multiple organic disorders with and without manifestations normally treated in the podiatric practice in order to provide the student with a better understanding of the spectrum and ramifications of disease. Thirdly, there must be closer association with medical staff in order to clearly and mutually understand the role that practitioners of podiatric medicine should play. For example, at the LAC-USC Medical Center both the students and podiatric faculty have an opportunity to attend seminars and conferences in various departments of the hospital to both broaden their own understanding of disease and participate in improved patient service programs; students are then exposed to a variety of pathology which is ordinarily not seen in the average podiatric practice or soley in podiatric clinics. There should be consideration of a residency program in association with orthopedic departments to assist the practitioner in the understanding and implementation of current practice. The majority of medical students are unprepared at the completion of their formal school curriculum to take care of patients without supervision. In past years when medicine was not so complex, a year or two of internship was sufficient. As complexity increased and the medical ethical responsibility and liability became more specific, it became apparent that students needed more graded clinical experience under supervision before they could enter practice.

It is this graded experience that became the residency program. The podiatry student likewise has limited clinical experience. He needs more intensive supervised experience both in hospital based clinics and ambulatory care settings to develop his skills and his competence. In that setting, he can work more closely with residents in other disciplines (ortho, vascular surgery, rehab, derm). And finally, but of

equal importance, there must be an emphasis on the prevention of disease, early treatment leading to reduction in the need for hospitalization.

Emphasis on preventive health is ultimately less costly. It is considerably more desirable from an improved health standpoint to prevent disease or disability than to be required to treat. We must make our patients more aware of the cause of disease, (health education) in order to reduce incidence of life threatening or debilitating states, as has already been done in areas such as infectious disease and prenatal care. The acute episodic emphasis current today proliferates over-utilization of limited resources. We must intervene and interrupt the cycle. There must be coordinated emphasis on changing habits, behavior modification in eating, working, and living that aggravate or precipitate health care problems.

We must recognize that our population demographics are changing. Life expectancy is increasing to a degree where we can expect larger numbers of the elderly who will require care and who must be treated in a manner that will allow them to enjoy a qualitative life that is not only acceptable but hopefully ambulatory. We can expect large numbers of patients with long term vascular and/or metabolic problems which manifest themselves in later years. Preventive care maybe the most positive approach to intervention in this area. Recognition of foot problems that may exacerbate or develop at an older age should be impressed on students and proper care and patient education should be initiated wherever possible and as early as possible. Continued environmental stresses related to jobs and recreational activities will create yet another avenue where preventive methodologies must be instituted.

If this can be accomplished, we will reduce the need for hospital beds allowing the industry to develop a a limited number of hospitals with highly technical capabilities concentrated in accessible geographic areas but the concentration of educational capabilities will be significantly more intensive than they are today. As ambulatory health care centers develop, more services will be available to the patient in his own environment and referrals to more specialized centers for specific treatment will be reduced.

The future should hold increasing development of these satellite clinics situated in the neighborhoods or work complex, the schools or operated by public governmental or private health care groups. Much of the care here could be provided by allied health professionals. When illness or disability is discovered, treatment could be available in neighborhood comprehensive health centers or private offices with minimal

referral to the acute hospitals. The latter will find continued use as major trauma centers and facilities to provide treatment for serious catastrophic illness. I would envision larger numbers of surgi-centers providing short term or one-day stays for minor surgical procedures, thus further reducing the use of acute hospitals.

Some form of national health coverage will certainly evolve by the 21st century. It undoubtedly will not be cradle to grave or the fulfillment of every preceived medical and social need. Such coverage would be too costly and not necessarily beneficial. There will be greater emphasis on the individual assuming responsibility for his/her own health care.

This methodology should not involve expensive or hazardous instrumentation. With earlier detection, earlier intervention will be possible. This intervention will include reassessment of our earlier modes of therapy. Our present therapeutic efforts include drugs, surgery, radiation, isotopes, physiotherapy, prosthetic and orthotic devices, etc. more rigid standards and cost benefit assessments for these therapeutic modalities will be developed.

The rapid proliferation of specialties and subspecialties will cease. Instead, new areas of expertise will be required but the focus will continue to be on integrated rather than fragmented health care.

In this context, health care professions will be organized for delivery of service, the emphasis returning to the patient and not the provider. This change will cause infighting as providers search for a meaningful role in the new order. New involvement or encroachment on present specialties may well occur. But, if indeed the trend is toward the provision of primary integrative care, we can all play a meaningful role. It is incumbent upon all of us to be ready for this new era and to prepare those who will follow us in the best possible way. I leave the choice to you. The challenge is to develop the future educational and treatment approaches to provide a healthier profession as well as a healthier society.

Sol Bernstein, M.D.
Medical Director

March 1979

DIRECTIONS OF THE HEALTH CARE SYSTEM -
POTENTIAL EFFECTS ON PODIATRIC MEDICAL EDUCATION

LEONARD A. LEVY, D.P.M., M.P.H.

WEDNESDAY, MARCH 21, 1979

DIDACTIC I

DIRECTIONS OF THE HEALTH CARE SYSTEM - POTENTIAL EFFECTS ON PODIATRIC MEDICAL EDUCATION

Leonard A. Levy, D.P.M., M.P.H.
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To make predictions about the future of podiatric medical education would be rather presumptuous. It also would most surely create an environment leading to controversy among faculty as well as community practitioners. It should be quite obvious if one looks at the numerous variables that can affect health professional education, that the future will not evolve into something as rigid as a cast iron statue. Furthermore, many of these variables are also in the state of evolution, if they have even been established.

The term "variable" often produces a mind-set that causes people to think in mathematical concepts. For anyone to think in such terms however, would be as unproductive as attempting to use the Pythagorean theorem to carry on United States international diplomacy. Perhaps this would be more readily appreciated if we identify and examine these variables in terms of their affect on health professional education in general and, if there are significant interprofessional differences, podiatric medical education in specific.

An outline showing these variables in a somewhat dynamic manner and which attempts to analogize them to the multiple reactions occurring in biological systems appears in figure one. Like a biological organism, a malfunction or deficiency in any of its essential components (i.e. the nucleus, protoplasm and nutrients) has disasterous consequences. In providing any form of health care the requisite knowledge, skills and manpower is the nucleus of the entire process, derived from professional schools and training programs as well as from a network of basic and

applied research activities. How and what services are provided as well as to whom and where, make up what is loosely referred to as a health care system. The nature of this so-called system is ultimately decided by people in our society. All these people, at some period of time, find themselves in the role of patient in situations where they are attempting to receive advice for the maintainance of health or are receiving care for one or more disorders. These people are either individuals, families, groups or communities. The actual operators of the machinery which allow the system to work are the various providers of services. They are directly supported by numerous personnel with various levels of knowledge and skills as well as by those who maintain and administer the multitude of operations and facilities that become an integral part of delivering health services. All of these individuals (i.e. the providers and people) interact and within some simple or sophisticated facility, form the health care system or the protoplasm of this dynamic state of affairs.

Finally, the life blood or nutrients required to assure the viability of the system and its source of manpower and knowledge, is the availability of adequate funds. These are derived by elements of the public and private sector. This is in the form of tax dollars used to finance such existing and anticipated programs as Medicare, Medicaid, federal and state grants and contracts, Workman's Compensation, and National Health Insurance (NHI). It is also in the form of private monies as demonstrated by health and accident insurance premiums, gifts by people and industry and tuition by people who become students of disciplines and occupations which become involved with the system.

If we explore one example, it is not difficult, although admittedly

simplistic, to see the consequences of decreased public funds in the form of grants and contracts. One extreme consequence is to shift the entire burden over to the private sector. This requires the people along with their industrial organizations to bear the complete burden of the health care system. The other extreme is to shift the major source of funding of the system to the public health care programs (i.e. Medicare, Medicaid, NHI, etc.). Like the many biochemical reactions taking place in biological organisms, various buffers will cause a situation resulting in equilibrium somewhere between both of these extreme alternatives. These buffers, of course, include political forces, the economic condition of the nation, the state of health care technology, health manpower availability, and changing cultural and social conditions. Without implying any political analogy, the direction of the resulting equation to the left (i.e. public funding) or to the right (i.e. private funding) depends on the strength or importance of these and perhaps other buffers.

Podiatric medical education, while historically having to function and grow with mild to moderate funding anemia, may have to withstand a more severe case of this condition. This, ironically, could be during a period when podiatric medical services are increasing in demand. With more and more individuals in our society who are victims of so many common chronic diseases with significant pedal manifestations, the demand for foot care will continue its geometric rise. These conditions include diabetes, peripheral vascular disease, various forms of arthritis, patients who have suffered cerebrovascular accidents and others. Compounding this is the continuing increase in both the number and percent of elderly in our population. Not to be underestimated is the more than passing interest in physical fitness activities including jogging,

running, and other exercises frequently resulting in the demand for foot care.

The interest in the health of these people is not limited to the relatively small profession of podiatric medicine. Because of the fact that a more global interest does exist including that of other health professions, the government and a number of increasingly more powerful private organizations, the increase in the elderly, physical fitness and in those with chronic diseases is becoming an extremely important force or buffer in the biochemistry of the health care system.

While interest in changing the way health care is financed and delivered exists among some political figures and rather powerful private groups, realists must admit that before any significant changes in this area come about, at least a few years will elapse. Unless podiatric medical education broadens its base of support from the public sector rather significantly, it may be facing a period of severe funding anemia for at least a few years.

Among the signs and symptoms of this anemia may be continued escalation of tuition, decrease in applicant pools, and reduction in the quality of classes accepted to the colleges of podiatric medicine. It also could create a profession whose members will come from the more affluent segment of the population with minimal representation from the traditionally poorer minority groups and the middle class. Prophylaxis against this is difficult and may be quite frustrating initially. The successes that some of the colleges have had in obtaining or making progress toward state support are obviously a start and certainly were no small accomplishments. But on the whole, the colleges know that this is still far from a stabile source of operational funds

and continue their efforts to strengthen this potential source of income. Whether these discussions and present relationships will lead to some sort of affiliation with the state or even integration within state university systems is certainly a possibility but by no means a certainty. Such decisions will be a function of the time including such considerations by state officials as the state economy, political factors and the perceived need for podiatric medical care and manpower. Simultaneously, it will include considerations by the colleges and profession of podiatric medicine regarding the degree of financial distress the schools may be experiencing, the willingness of the college leadership to surrender their relative autonomy to the bureaucracy of the state, the attitude of the community podiatrist and the continued escalation in the demand for podiatric services.

A combination of improved relations with medicine, legal issues, the ability of podiatrists to improve the census of financially depressed hospitals, and the growth of residencies and board certification in podiatry, point rather clearly to a fairly rapid increase in the number of hospitals open to podiatrists for practice privileges. Conducting podiatric medical education in academic health science centers to a major degree will probably remain a less common occurrence for sometime except for any new schools that may evolve between now and the turn of the century.

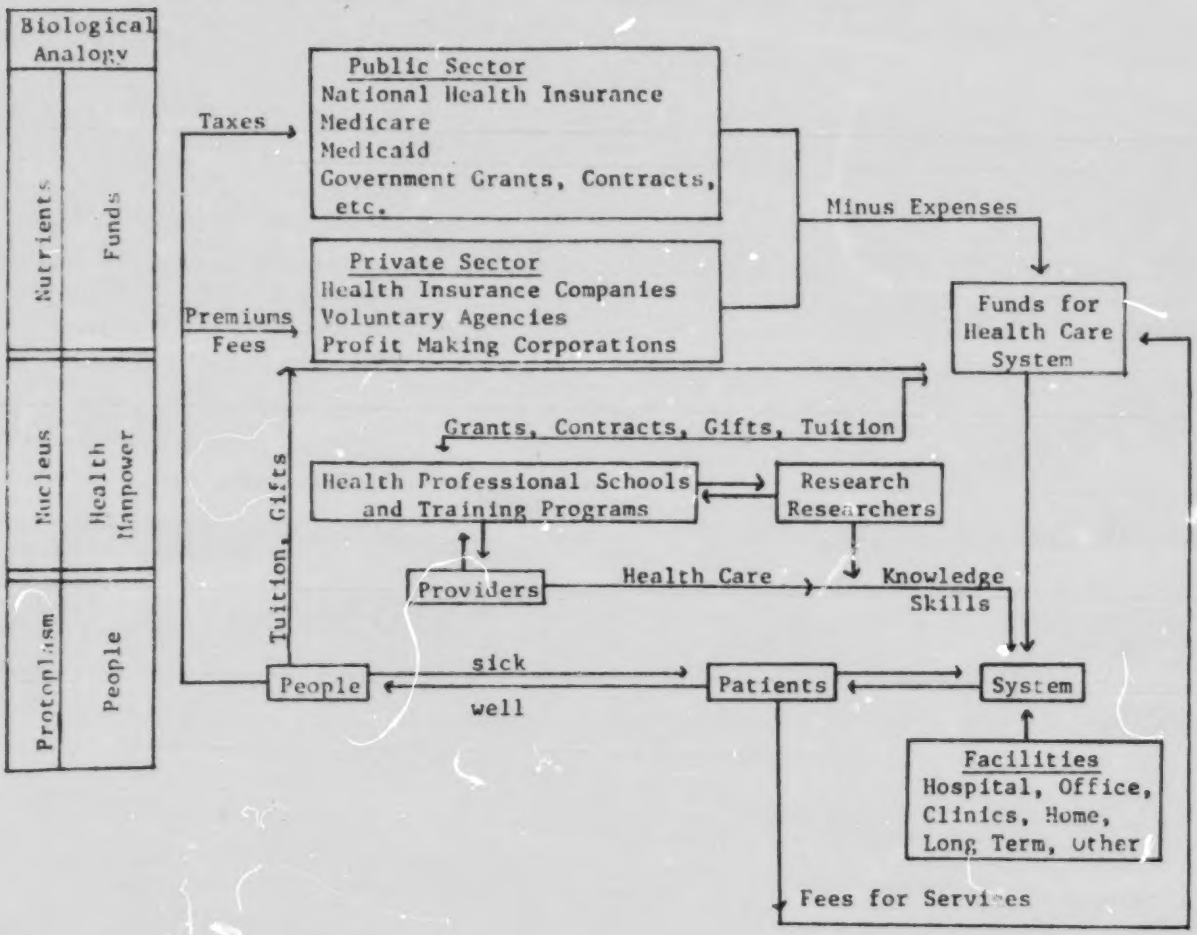
If we examine the schematic outline (figure one) from another vantage point such as examining the consequences of adding more knowledge and skills derived from clinical experience and research activities, other burdens must be absorbed by the system. This may be a particularly good example since the past three decades are characterized by enormous

advances in medical science in general. Podiatric medicine has completely changed its complexion partially as a result of these advances. However, it is reasonable to assume that this knowledge explosion is analogous to the fertilized egg splitting multiple times to form millions of cells. Thus, a logarithmic growth in knowledge can be expected to continue causing greater demands on the health professional school. Translating this into relevant terms to podiatric medical education means the need for more facilities, faculty and funds. That this will have to include a far broader role on the part of the public sector in partnership with the private sector, appears obvious. It also follows that the role of podiatric medicine as well as other health disciplines will more than likely be undergoing very significant role changes. Such changes will probably answer the question that is more frequently being asked within podiatry as well as by other members of the health care community, "Should podiatric medicine become more closely allied to or integrated within medicine?" In a literal sense, the genes that contain the answer to this and similar questions are rapidly forming and in far less time than we may like to believe.

Figure 1

SCHEMATIC OUTLINE OF THE DYNAMICS OF THE HEALTH CARE SYSTEM

AND ITS EFFECT ON HEALTH PROFESSIONAL EDUCATION - A BIOLOGICAL ANALOGY



THE EVOLVING ROLE OF THE PODIATRIST

HARVEY LEMONT, D.P.M.

WEDNESDAY, MARCH 21, 1979

DIDACTIC I

THE EVOLVING ROLE OF THE PODIATRIST

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Upon trying to formulate some ideas for this brief talk, I realized that in order to gain perspective as to where the profession is at this moment, and might be in the future, some understanding of podiatric history seems in order.

It was only 83 years ago that our profession became recognized under law. The Chiropody Practice Act of 1895 defined chiropody as "the surgical treatment of abnormal nails, removal of all superficial excrescences of the hands and feet involving warts, corns, calluses and surgery involving the skin." It is interesting to note that the first law governing the practice of podiatry enabled the profession to perform surgery. The chiropody profession was quite satisfied with the gains they had made and in an attempt to secure a level of professionalism developed the following code of ethics: not to perform surgery below the skin; not to use titles not lawfully theirs, such as doctor; not to use sandwich men or glaring feet on windows or signs; nor to share offices with manicurists, hairdressers, beauty specialists and barbers. An editorial appearing in Pedic Items, the official journal of the profession at that time, perhaps best captures the conservatism and scope of podiatry practice at that time. The editorial was denouncing a group of young radicals who were endangering all of the progress the profession had gained by daring to construct "arch supports" for their patients; it was the authors' view that the construction of arch supports was strictly in the province of the orthopedic surgeon who had a complete knowledge of anatomy and physiology of the foot. It is also interesting to note that some of the physicians responsible for establishing the first Practice Act of Podiatry and who developed the first Institute of Podiatry in 1912 nad ideas which some educators in the field of podiatry and medicine have today. Dr. M.J. Lewi, a physician who founded the first Institute of Podiatry in 1912, stated in an address to the Chiropody Society "that for every person who practices your branch of medicine,

strives not for the master of chiropody degree but the doctor of medicine degree, that is the goal for which we who are at the helm are steering; so that no one without it shall be permitted to give medical care unless licensed to practice medicine. With this accomplished you will be part of medicine and not a mere twig on the branch of the medical tree." It is worthy to note that Dr. Lewi had no intention of creating a profession separate from medicine but strived to provide chiropodists with M.D. degrees with a speciality in the foot. But as you can guess, Dr. Lewi's philosophy was not generally appreciated. The National Association of Chiropodists' reaction to this concept was, and I quote, "If this concept ever eventuates, the same state of affairs will come into existence that originally developed; the need for a speciality to properly care for the minor foot ills of humanity." Sound familiar? Have we not heard this before in regards to many young practitioners' overzealous concern to practice medicine and surgery. Have we not heard these same sentiments in regards to the potential hazard of the podiatric assistant program?

In the 1920's, the profession had increased its knowledge of mechanical problems of the forefoot and increased capabilities of handling foot disorders. This resulted in meaningful and specific management of problems of the foot and an adeptness in padding, shielding and adhesive strappings.

The 30's and 40's were hallmarked by the general use of arch supports to control foot function, mold therapy, orthodigital and physical therapy. In the area of surgery there was a small group of practitioners who were performing surgery who founded a small medical group called the American College of Foot Surgery.

It was not until 1950 that rapid changes occured within the profession. Educational course requirement of podiatry schools changed their pre-requisite admission requirements to be identical to schools of medicine. Hospital affiliations grew as an important concern of the

profession. One thousand chiropodists had such affiliation in 1953, especially in out-patient clinics. Changes in state practice acts were implemented and many third-party health care carriers covered podiatry services. By the late 50's, early 60's, a new phenomenon occured within the profession known as the Residency Program. The renaissance of podiatric surgery occured with the opening on June 4, 1956, of Civic Hospital in Detroit. Here began the first formal post-graduate surgical program in podiatry. Two other programs were also in existence, St. Luke's and Children's Medical Center in Philadelphia and the Oakland, California program.

The residency program enabled podiatrists who were lucky enough to have them, an opportunity to reach a high level of competence quickly. It was during that time that some of our colleges, particularly out west, began to initiate post-graduate seminars in foot surgery. It was during the 50's that the scattered and sometimes unrelated research of Inman, Strauss, Elftman, Manter, Hicks and Hibbs and many others were put together as a meaningful biomechanical concept by Dr. Merton Root. Among the other things the new biomechanics clarified the relationship between the forefoot and the rearfoot, further replacing many confusing concepts of foot imbalance of earlier years.

The 60's were a significant decade for podiatry was now recognized as a profession that should be included in many governmental programs such as Medicaid, Medicine, Health Maintenance organizations and federally-funded regionally and comprehensive medical programs. The Health Profession's Educational Assistance Act of 1963 with its amendment to include podiatry in 1965 and the subsequent Health Manpower Education of the late 60's and early 70's have enabled podiatric education to receive over $20,000,000 in federal funds. Recognizing deficiencies within podiatric education, the A.P.A. established an independent commission to study the status of podiatry education in 1960 known as the Selden Commission. The Selden report served to stimulate a major qualitative improvement in the educational

progress of the colleges. Now where are we today? The highlights of the 70's can be characterized by substantial achievements in hospital privileges, residency programs and change in philosophy of our colleges regarding the importance of full-time faculty.

In terms of hospital privileges, the Joint Commission of Accreditation of Hospitals now recognizes podiatrists as licensed practitioners similar to medical doctors, doctors of osteopathy and dentists to whom hospitals may grant privileges. It has been a significant step forward towards paving the way for podiatrists to serve on the hospital team. Also of recent interest is the Health Systems Agency's recommendation to increase the number of hospitals granting surgical privileges to qualified podiatrists. In Connecticut, for example, the H.S.A. has recommended a 100% increase in hospitals granting surgical privileges to qualified podiatrists.

For the majority of graduating podiatrists in the 70's, general training does not end with their degree as it did only a decade ago. Over 300 residency slots have now been established, many in teaching hospitals accredited by the Joint Commission on Accreditation of Hospitals. The Joint Commission also revised its survey questionnaire which hospital administrators are asked to complete when hospitals are evaluated. The questions now recognize the role of podiatric residents and externs in approved training programs to be on an equivalent basis to dental residents.

During this last decade podiatrists have significantly improved their medical and surgical skills. Partly, the result of a closer working relationship between medicine, the gap between new technical innovations has lessened and it is now becoming more common for the podiatrist to utilize a broader range of diagnostic and therapeutic modalities in the management of his patients. Tomography, to locate certain tarsal coalitions of the foot; CAT scannings to localize foot neoplasia;

bone scanning utilizing radioactive labels to detect pre-radiographic signs of osteomyelitis. Podiatrists of today are developing a higher index of suspicion of systemic disease when its stigmata affects the foot. He is more routinely ordering and interpreting serological and, at times, sophisticated immunological tests to evaluate his patient's complaints. He also is increasing his knowledge of pharmacology, drug therapy and drug interactions. He is in a better position to clinically recognize the signs of altered body function and able to order those tests which confirm its existence so that he may modify his treatment in light of these findings.

In many hospitals which operate podiatric residency programs, the medical history and physical examination is done by the podiatric resident. Not only on the podiatry admissions, but for general surgery and orthopedic admissions as well. In the area of surgical achievements, podiatrists are developing many new techniques for joint replacements, tendo-achilles lengthenings, bone grafting, and muscle, ligamentous tendon and muscle transfers. Biomechanical considerations have strongly influenced these new modifications and techniques making them unique.

Now, what has the future in store? Since we are all here in a joint effort to suggest a new design for podiatry education, we must raise the question, "Podiatry education for what?" Before planning curriculum and subject matter for students who will be practicing podiatry in the 1990's as well as into the next century, we must be willing to do a certain amount of "crystal ball gazing" into conditions, attitudes and forces that are expected to prevail in that society. Will podiatrists, as Dr. M. J. Lewi stated at the turn of the century, eventually hold medical degrees with specialities in the foot? Will the concept that some educators have today of podiatry being limited licensed practitioners of medicine come into being? What impact will national health

insurance have on the practice of podiatry in the training of our students? How many patients under that system would want to be treated in our present clinic environments when they could opt for a private doctor? Will there be any more college foot clinics to train our students? Ten years ago our institution's philosophy was to train specialists at the first professional degree level. Can the emphasis on the residency program change this and if so, to what extent?

In the early 60's, there were only 3 residency programs, now there exists close to 300 slots providing a continuum of podiatric education for over 50% of our graduates. Will the availability of this educational continuum de-emphasize or change the role of our colleges and types of podiatrists that we will be training at the first professional degree level? Will we have to modify or evaluate our educational objectives today or in the future in light of what will be taught during the residency? And lastly, and perhaps more importantly, will the consumer and the society in general make demands of our colleges and profession that they have not made until now? Consumers are now demanding they share control over medical institutions, be involved in critical decisions as to what goes on in medical school, what the community health care practices are, what the national health goals should be, whether hospitals should be doctors' workshops or community-oriented health centers.

In a realistic appraisal of what podiatry education has been doing until now, academicians are beginning to realize that consciously or unconsciously they have opted for a curriculum that is more right for them than the students they teach and a society they are supposed to serve. We must guard against internalized professional aspirations for the purpose of accumulating surgical and medical knowledge without consideration of the specific needs of the public. In an elusive pursuit to become part of the medical team, we must guard against a curriculum that is not responsive to the needs of society.

Crucial decisions about education of podiatrists of tomorrow must be estimated as well as the nature and extent of health care the society will demand and support in the 1990's and the turn of the century.

Allen Pifer in his paper to the 18th Meeting of the American Medical Association of Colleges stated, "No longer does the special mystique of professions render them unassailable. No longer is their authority entirely secure. Revolution in our society towards consumerism and the day when the voice of the consumer will be heard is here."

THE D.P.M. CLINICAL CURRICULUM TODAY:

AN ANALYSIS

Richard H. Baerg, D.P.M., M.P.H.

Wednesday, March 21, 1979

Didactic II

THE D.P.M. CLINICAL CURRICULUM TODAY: AN ANALYSIS

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INTRODUCTION

In order that the podiatric physician can carry out his or her proper role as a health professional, the clinical elements of the professional training period and process must reflect a clear understanding of that role. The clinical curriculum of our colleges of podiatric medicine carry the primary responsibility of determining the manner and form of the podiatric practitioner function in our society. Therefore, it is essential that the faculty, the administration, and the board of trustees of our colleges comprehend the extent of the responsibility and commitment attendant to their place in podiatric medicine.

This presentation will attempt to review the contemporary clinical educational programs at our colleges. The presentation will cover both the didactic and the clinical experience aspects of the curriculum. The classroom contact hours of the curriculum will be examined initially followed by a general description of the clinical experience offered by our colleges. I would like to express my appreciation to the Department of Community Health of the Illinois College of Podiatric Medicine for the opportunity to utilize segments of a recently completed curriculum study for the first segment of this presentation.[1]

COMPARATIVE STUDY OF DIDACTIC CURRICULUM

The curriculum in podiatric education has been undergoing change in recent years in response to the growth of the profession. The five colleges offer training in the general basic skills and their curricula are presumed to be similar to a large extent because all students participate in the National Board Examinations. However, because of tradition and other considerations, it is generally believed that the five colleges do differ in small but significant ways in their overall curricula.

There is to date no systematic study of the actual curriculum differences in the five colleges or to what extent are the five curricula uniform in their contents. There has also been no in-depth study of the comparability of course contents, making it difficult to evaluate in a meaningful way the scope of podiatric education offered by the five colleges. Although it may be reasonably assumed that some curriculum uniformity must necessarily exist, there is obviously a need to document this assumption.

This study is intended to be a preliminary and superficial review. Its aims are exploratory rather than definitive or evaluative. Its results are best used as general guidelines for subsequent more in-depth studies.

METHODOLOGY

The curriculum at each college is examined in two levels: Courses as classified by broad subject areas and the number of contact hours for each course. The number of hours for each course as well as for each broad subject area at the five colleges can be compared, yielding a general picture of the nature and scope of the curriculum.

The data were obtained from current college catalogs, and allowances should be made for changes and/or errors in the catalogs which this study has no means of identifying. However, it can be assumed that the catalog information is basically accurate and is, therefore, a reasonable basis on which to compare course offerings. The data from the New York College of Podiatric Medicine were obtained directly from the college, as its catalog does not specify contact hours for courses offered.

It should be noted that, while the number of contact hours for a particular course may be considered to be a convenient and possibly even an accurate index of the scope and depth of the subject area in question, the only satisfactory way to compare courses is to examine their respective syllabi. For purposes of this study, the basic medical science curriculum is included for review.

RESULTS

The results are presented in Tables I to IX.

1. Tables I to VIII deal with specific courses which are identified as belonging to the broad subject areas of podiatric medicine, medicine, radiology, surgery, orthopedics, community health, basic science group (physiology, biochemistry, microbiology, pathology and pharmacology) and anatomy. The numerals in these tables refer to the following: a) the left-most number refers to the year the course is offered; b) the second group of numbers refer to the semester/quarter the course is offered; and c) the last set of numbers refers to the number of contact hours for the course. The TOTAL row figures refer to the total number of contact hours from all the courses offered in a particular subject area.

There are three basic differences among the five schools. First, there are differences in the number and variety of courses offered in the subject areas. However, these differences may be more apparent than real because course titles do not indicate the scope of the courses. It is possible that the contents of two or more separately listed courses in one school may be all included in one course in another school. Only a syllabi review can ascertain if the subject areas are covered to a similar degree in all five schools.

Second, the number of contact hours of instruction in the subject areas differ among the schools. There are instances where one school has twice the number of contact hours of another school for the same subject area, as for example, podiatric medicine, physiology, biochemistry, microbiology, radiology, surgery, pharmacology and community health. Some of these differences may be due to the crudeness of the data, in that the actual hours of training may not be adequately represented in the college catalogs; for example, laboratory sessions may or may not be included as class contact hours. However, if this explanation cannot account for the observed differences in contact hours, then it would appear that substantial curriculum variations exist in the five schools either in terms of scope or depth, or more likely both. These variations, if shown to be present, are a matter of some concern to the profession because they pose the question of whether some institutions are training podiatrists whose competence may or may not be comparable to those trained at other institutions. A related question is whether these variations occur above the levels of minimum standards. If these variations extend above and below the minimum standards, it would appear that some schools will need to review and revise some portions of their curricula to bring certain subject areas at least up to minimum standards.

Third, there are variations in the timing of instruction of certain subject areas. While this may be a matter of minor concern as long as the required training is offered sometime during the four-year curriculum, it is conceivable that certain timing and sequence of courses may be more beneficial to the student. A major difference among the five schools is the offering of fourth-year courses at PCPM and NYCPM, while no courses, either required or elective, are offered in the fourth year at CCPM, ICPM and OCPM. It seems worthwhile to evaluate the pros and cons of having fourth-year courses since this is a critical period in podiatric education.

These are general observations for Tables I to VIII. For more detailed information on specific courses, the tables should be consulted.

2. Table IX is a summary table showing the total contact hours of instruction in twelve subject areas in the five schools, excluding clinic time. The table also shows the ranking of contact hours in the schools.

The mean total number of contact hours is 2, 219.6. PCPM and NYCPM are above the mean, and this is also reflected in the contact hour rankings of these two schools. The difference in contact hours between PCPM, the highest-ranked school, and CCPM, the lowest-ranked school, is over 800 hours, which is almost the equivalent of two typical semesters. To reiterate the point made earlier, if this difference is real and is not due to the incompleteness of catalog listings, there would appear to be some substantial differences in curriculum among certain institutions.

With the exception of OCPM, the remaining four schools are reasonably similar in the percentage distribution of contact hours in the basic sciences - between 50% and 60%, excluding clinic hours. Considering the fact that the majority of basic sciences courses are offered during the first year, this gives some idea of the academic load carried by freshman students. However, if clinic time is included - and this amounts to a minimum of 1,250 hours at ICPM - the proportion is reduced to about one-third of the total training hours.

OBSERVATIONS

This preliminary study of podiatric curriculum is limited by the crude nature of the data available as well as by the possible inaccuracy of the data. The differences observed in this study clearly suggest that further studies are indicated to explain these differences. While teaching institutions cannot be expected to have identical curricula, because of their differences in tradition, resources and circumstances, one can reasonably argue, however, that the differences, if any, should be documented and reviewed periodically so that the level and quality of professional training can be monitored. This process of self-review is particularly appropriate in this instance because a benchmark review has yet to be done and also because some substantial curriculum differences may be present among the five training institutions.

TABLE I. COURSES IN PODIATRIC MEDICINE BY COLLEGE.

COURSES	ICPM	OCPM	CPCM	PCPM	NYCPM
Fund. of Podiatric Med.	1/1,2/48				
Basic Podiatry					1/1,2/64 2/1,2/64
Intro. to Podiatry				1/1,2/48	
Podiatric Medicine		1/1,2,3/64 2/1,2/44 3/1/22	1/1/17 3/1,2/68		3/1,2/64
Intro. Clinical Podiatry		2/1,2,3 /66	1/2/34 2/1/34	2/1,2,3 /144	
Patient History Techniques	2/2/16				
Podopediatrics	3/1,2/32	2/1,2,3 /33	3/1/34	3,1,2/24	3/1/32
Podogeriatrics					3/2/16
Clinical Pharmacy	3/1/8				
Sports Medicine		3/3/22		3/3/24	
Onychopathy				2/1/12	
Podiatric Pathology				2/3/24	
Total No. of Hours	104	251	187	276	240

TABLE II. COURSES IN MEDICINE BY COLLEGE

COURSES	ICPM	OCPM	CPCM	PCPM	NYCPM
General Medicine			2/2/34 3/1,2/68		
Dermatology	2/16	3/2,3/44	3/1,2/68	3/1,2/60	3/1,2/64
Lower Extremity Diseases	2/1,2/64				
Lab Diagnosis	2/1,2/64				
Anesthesiology/ Intro to	2/2/16	3/1,2/22		3/1/24	3/1/16
Anesthesia	3/2/16				
Neurology "	3/1,2/64		3/2/34	3/1,2/60	
C.P.R.	1/2/6 3/1,2/3				
Medical Specialties		2/1,2,3 /132 3/1,2,3 /132			
Internal Medicine				3/2,3/60	3/1,2/64
Modalities of Phy. Medicine					
P.V. Diseases	3/2/16		3/2/34	3/1/30	3/1,2/64
Phy. Medicine				3/1/18	3/1,2/32
Clinical Dermatology	3/1/16				
Phy. Diagnosis	3/1,2/64				
Systemic Medicine	3/1,2/32				
Rehab. Medicine	3/1/8				
Emergency & Traumatology			3/1/34	3/3/12	
Psychiatry				3/2/24	
Prin. of Medicine				4/1/24	
Total No. of Hours	385	330	272	312	240

TABLE III. COURSES IN RADIOLOGY BY COLLEGE.

COURSES	ICPM	OCPM	CPCM	PCPM	NYCPM
Radiology	2/2/32 3/1,2/64	2/1,2,3 /66 3/2,3/44	2/2/17 3/1/34	2/1/12	3/1/16
Roentgenology				2/2,3/48	3/2/16
Roentgenology Conference				4/1/24	
Radiographic Interpretation				4/1/24	
Total No. of Hours	96	110	51	108	32

TABLE IV. COURSES IN SURGERY BY COLLEGE

COURSES	ICPM	OCPM	CPCM	PCPM	NYCPM
O.R. Techniques	2/2/16			2/3/24	
Principles of Surgery	3/1/8	2/1,2,3 /66	2/2/34	2/3/24	2/1,2/64
Podiatric Surgery	3/1,2/64	3/1,2,3 /66	2/2/34 3/1/34	2/3/24 3/1,2,3 /72 4/1/24	3/1,2/64
Biomechanical Foot Surgery	3/1,2/32	3/1,2/44			
Surgical Specialties		3/1,2,3 /66			
General and Vascular Surgery			3/2/34		
Mini Incision Surgery				3/2/12	4/1/14
Malpractice and Standards of Care.				3/3/24	
Surgical Grand Rounds				4/1/24	
Combined Surgical Principles					3/2/16
Cadaver Surgery					4/1/14
Total No. of Hours	120	242	136	228	172

TABLE V. COURSES IN ORTHOPEDICS BY COLLEGE

COURSES	ICPM	OCPM	CPCM	PCPM	NYCPM
Biophysics				1/1/36	
Biomechanics	2/1,2/64	2/1,2,3 /66 3/1,2,3 /66	1/2/34 2/1,2/85 3/1,2/68	1/2,3/48	1,1/32
Orth. Padding and Taping	2/1/16				
Kinesiology	2/1/16				
Clinical Orthopedics	2/2/32				
Pathomechanics				2/1,2/72	
Orthopedics		3/1/22		2/1,3/48	1/2/32 2/1,2/64 3/2/32
Ortho. Surgery (Seminars)					3/1/16
Ortho. Diseases	3/1,2/69				
Orthotics and Prosthetics		3/2,3/44		3/1/24	
General Orths.				3/1/24	
Total No. of Hours	197	198	187	252	176

TABLE VI. COURSES IN COMMUNITY HEALTH BY COLLEGE

COURSES	ICPM	OCPM	CPCM	PCPM	NYCPM
Community Health Methods	1/1/32				
Professional Orientation		1/1/11			
Biostatistics/Epidemiology				3/2/18	
Medical Jurisprudence	3/1/8				4/1/14
Community Health Agencies and Programs	3/1/32		3/2/34		
Practice Management	3/2/32	3/1,2,3 /33			
Human Behavior		3/3/22			
Community Health I				3/2/18	
Community Health II				3/3/18	
Forensic Podiatry				3/3/24	
Professional Admin. and Development.				4/1/24	
Third Party Payment				4/1/24	
Community Medicine					4/1/14
Total No. of Hours	104	66	34	126	28

TABLE VII. COURSES IN PHYSIOLOGY, BIOCHEMISTRY, MICROBIOLOGY, PATHOLOGY & PHARMACOLOGY BY COLLEGE.

COURSES	ICPM	OCPM	CPCM	PCPM	NYCPM
Physiology	1/1/48 1/2/48	1/2,3/176	1/2/102	1/2/108 1/3/108	1/1,2/176
Physiology Case Studies	1/1/48 1/2/48				
Physiol. Sciences Lab	1/1/32 1/2/32				
Total No. Hours	256	176	102	216	176
Biochemistry	1/1/32 1/2/32	1/1/88	1/1/102	1/2/48 1/3/84	1/1,2/176
Total No. Hours	64	88	102	132	176
Microbiology	2/1/96	2/1,2/66	1/2/51 2/1/76.5	2/1,2/264	2/1,2/256
Total No. Hours	96	66	127.5	264	256
Pathology	2/1,2/128	2/1,2,3 /66	2/1,2/136	2/1,2/120	2/1,2/96
Clinical Pathology		2/2,3/88			2/1/48
Prin. Pathology				2/3/60	
Total No. Hours	128	154	136	180	144
Pharmacology	2/1,2/64	1/3/22 2/1,2,3 /66	2/1,2/136	2/2,3/156	2/1,2/96
Total No. Hours	64	88	136	156	96

TABLE VIII. COURSES IN ANATOMY BY COLLEGE

COURSES	ICPM	OCPM	CPCM	PCPM	NYCPM
Gross Anatomy	1/1/96	1/1/110	1/2/85 2/1/51	1/1/108	1/1,2/320
Lower Extremity Anatomy	1/2/64 2/1,2/128	1/2,3/220	1/1/110.5	1/2,3/204	
Histology/Microscopic Anatomy	1/1/80	1/1/44	1/1/119	1/1/96	1/1/64
Neuroanatomy	1/2/32	1/3/22	1/2/68	1/1/24	1/2/64
Embryology	1/2/80				1/1/16
Developmental Anatomy				1/1/24	
Histopathology					2/2/48
Total No. of Hours	480	396	433.5	456	512

TABLE IX. TOTAL CLASS CONTACT HOURS BY SUBJECT AREAS FOR THE FIVE PODIATRY COLLEGES.

SUBJECT AREAS	# Class Contact Hours				
	ICPM	OCPM	CCPM	PCPM	NYCPM
Medicine	* (1) 376	(2) 330	(4) 272	(3) 312	(5) 240
Pod. Medicine	(5) 104	(2) 251	(4) 187	(1) 276	(3) 240
Physiology	(1) 256	(3) 176	(4) 102	(2) 216	(3) 176
Biochem	(5) 64	(4) 88	(3) 102	(2) 132	(1) 176
Microbiology	(4) 96	(5) 66	(3) 127.5	(1) 264	(2) 256
Pathology	(5) 128	(2) 154	(4) 136	(1) 180	(3) 144
Radiology	(3) 96	(1) 110	(4) 51	(2) 108	(5) 32
Surgery	(5) 120	(1) 242	(4) 136	(2) 228	(3) 172
Anatomy	(2) 480	(5) 396	(4) 433.5	(3) 456	(1) 512
Pharmacology	(5) 64	(4) 88	(2) 136	(1) 156	(3) 96
Comm. Health	(2) 104	(3) 66	(4) 34	(1) 126	(5) 28
Orthopedics	(3) 197	(2) 198	(4) 187	(1) 252	(5) 176
Total	(4) 2,075	(3) 2,165	(5) 1,904	(1) 2,706	(2) 2,248

Mean Total # of hrs

=2,219.6

Deviation from the mean in hours	-144.6	-54.6	-315.6	+486.4	+28.4

* The number in ( ) indicates the ranking. A ranking of 1 indicates the most, and a ranking of 5 indicates the least number of contact hours among the five colleges for a particular basic science or clinical area.

CLINICAL EXPERIENCE

This portion of the presentation will deal with the clinical experiences offered our students at the colleges. No attempt will be made to be specific to any college but rather to generalize on the broad area of clinical experience beginning with the first year and continuing through the fourth year of clinical education.

This presentation will not attempt to review the obvious need to establish protocols, objectives, and other important elements of effective clinical education for this early introduction to the clinic. Suffice it to say that these elements are essential to a successful learning experience.

The clinical experience at our colleges generally begins in the early basic science years through clinical correlation and/or clinical observation assignments. The clinical observation assignments are usually conducted in the foot clinics affiliated with the college. This early introduction to the clinical setting is important for several reasons. It serves as an initial step in the orientation of the student to the profession of podiatry as a provider in the health care delivery system. It also serves as an important phase in developing a proper professional attitude for the student which is expected to mature over the four years.

The principle reason is to give meaning and relevance to the basic medical science curriculum. Here the student is expected to receive the necessary reinforcement and proper application of the basic sciences to patient care and to develop within the student a strong foundation for applied medical science information rather than the development of specific skills or techniques. Each of our colleges accomplishes this task of early clinical experience in a variety of ways. Often, the effect of such efforts is a function of space, patient load, time, or constraints imposed by clinical faculty and clinical student priorities.

The second year clinical experience generally allows for greater involvement in direct exposure to patient care. This involvement is often focused on history taking, laboratory studies, and performing other diagnostic procedures. This clinical experience often follows or occurs concurrently with classroom preparation for such clinical involvement. The basic medical science curriculum is more clinically relevant at this time and is appropriately reinforced in the clinic. The purpose for the more expanded clinical experience in this year is multifaceted. First, it allows the faculty to begin to measure certain achievements in skill and knowledge attendant to the basic science curriculum and some early instruction in medical and podiatric courses. Second, it gives the student the opportunity to apply more directly his or her classroom information and its interface with the realities of clinical practice and the many variables the contact with patients provide. The student during this period should begin to identify more of his or her individual applications of the medical sciences than the prescriptive or impersonal roles found in the textbook.

The third year clinical experience can be viewed in one of several ways. Some of our college programs may relegate the third year student to that of an assistant to the fourth year student. In this type of program the student works as an understudy to the more senior student accepting responsibility as delegated. More often than not, the student is assigned to carry out those tasks that are otherwise considered routine or less interesting to the senior student. Other programs may assign the third year student to a catagorial role in a routine care section of the clinic. Here the student performs technical skills and duties. Limited assignments are also added in such clinical depths as the clinical labs, radiology, and the operating room. Clinical assignments for third year students may call for podiatric rotations outside the college clinic to affiliated health care facilities and hospitals. In addition, the student may rotate through general medical and surgical departments of these facilities.

The fourth year clinical program at our colleges is virtually void of classroom experience for the student. Within the fourth year our colleges attempt to bring all of the clinical areas together in an applied setting for care and responsibility of patients. The methodology used by our respective colleges is again varied. Some use a rigid department structure, wherein the student spends a specified period of time in each of the specialty areas of podiatric medicine. In addition, outside rotations are added to the clinical experience and in those areas having direct application to clinical practice. Most of these rotations are in teaching hospitals or health care facilities which are affiliated with our colleges on a formal instructional basis.

Other colleges offer their fourth year students an open clinical system wherein faculty, having specialty identification, are available to the students while the students remain in a single patient care setting. In effect, the clinicians rotate rather than having patients assigned to specialty areas. Likewise, it is possible to have a mix of these two approaches given constraints of time, space, patient load, and faculty availability. It is important to consider within the fourth year, or perhaps earlier, clinical experience in practitioners' offices, as this lends a less disciplined and rigid approach to clinical education. Here it is important that the college carefully evaluate which external office or clinical setting might be used and likewise the maturity of the student is equally considered important in making such assignments.

Most of our colleges have external programs for our senior students hundreds, and possibly thousands, of miles away from the main campus. Needless to say, strong logistic considerations are necessary and important to the proper functioning of these off-campus programs. Suffice it to say that the fourth year clinical experience, as it is presently constituted at our colleges, is rather diverse and many times organized according to the individual needs of the student, rather than what may be a clear educational objective for that particular year.

CONCLUSION

This presentation has attempted to review both the classroom and clinical learning experiences for our podiatric medical students. I realize that it is impossible to be definitive in this survey as to our college or which combination of approaches is proper or acceptable. I trust that at the close of these sessions we will be closer to the answer than we are at this moment.

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RESPONSIBILITIES OF PODIATRIC MEDICAL COLLEGES

Charles W. Gibley, Jr., Ph.D.

Wednesday, March 21, 1979

Didactic II

RESPONSIBILITIES OF PODIATRIC MEDICAL COLLEGES

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INTRODUCTION

A transitory glimpse at the title to this paper implies, almost immediately, a list of administrative responsibilities - physical plant, faculty, financial resources, academic standards, patient care, student housing and learning environment, etc. On second thought, however, I was forced to conclude that they are all too self-evident. If the latter conclusion is so warranted, then this presentation is unnecessary!!

Nevertheless, this conference attempts to assess the current state of the art of podiatric medical education and to assimilate our different philosophies into a plan of what it should be in the next decade. Therefore, I would like to define the administrative, faculty and student responsibilities in a college of podiatric medicine. So, let me begin.

MISSION

An institution of higher education (a university, a liberal arts college, a health professions college) has only one conspicious task - to transmit knowledge and to generate new knowledge. But this process of teaching and learning is not accomplished in isolation. The economic, social and the perceived needs of society often dictate the governing of an institution and they can affect, also, the difference between a quality program and the survival instinct. Because all of our colleges are independent, free-standing institutions (as opposed to a university system), we are even more uncomfortable in attempting to meet our basic needs; while at the same time trying to be innovative and lead this profession into the next decade. This dilemma should not destroy us, but rather it could be used as a catalyst for a redefinition of our mission and role in podiatric medical education. This charge mandates our getting educational houses in order. The

critical support necessary from the community (including the state and federal governments) cannot be obtained unless we have a clear understanding of the mission of the college. Therefore, our first responsibility as a college is to establish the purpose for our existence. What is our mission?

The stimulus, with regard to the tasks and mission of a college, comes from a recent article by the President of the University of Cincinnati, Henry S. Winkler (1). He reemphasized many principles of university education. Certainly most of them apply to our colleges of podiatric medicine. A few of them are worthy of note at this time:

1) Our central mission, and with it <u>there should be no compromise</u>, is to seek to expand knowledge and to disseminate it in the classroom, in the clinics, in our related teaching hospitals, in the journals and in the varieties of other ways that form the platforms for teaching and research.

2) That we recognize that academic programs are our primary concern while at the same time realizing that education takes place in a variety of ways, not all of which are in the classroom, laboratories or clinics. In fact, the role model of teaching by example probably has a greater influence on the mind of a student than any other forum.

In fact, every faculty member, student, trustee, department chairman, administrator in a health professions college is a moral agent. Each of us bears a moral responsibility for our own personal behavior in respect to the obligations of the profession and our colleges. Secondly, we also have a responsibility for the collective actions of policies of the school with respect to its obligations as an institution for society. The degree of those responsibilities for collective action varies, of course - faculty and administration bearing a more explicit burden than students, but none are totally exempt. (I highly recommend a recent article by Pellegrino on medical schools as moral agents - Trans. Am. Clin. Climatol. Assoc. 88, 54-67, 1977).

3) That we pursue realism in decision-making that enables us to make our own decisions rather than have them made for us. And if we do not make them in podiatric medical education, who will? The federal government? The health care industry? The orthopedic surgeons? Hospital administrators? Students? We must chart our own voyage!

Public regulation is increasing daily. Podiatric medicine surely will be regulated by the public - because the public is determined to regulate anything it doesn't understand. And they know little about medicine, let alone podiatric medicine.

4) That we aim more consciously to prepare graduate students who will function effectively in the broader society in which they live as well as in their offices as private practitioners. Their role is more significant than that as a practitioner!

5) That we promote consultation among faculty members and students on decision affecting them. I reiterate - an atmosphere of consultation not of a democracy.

autocratic approach stifles and belongs in another era.

6. That we seek to develop trust among faculty members, students, administrators and staff members based on performance and results - on all sides.

One of the ingredients often lacking is a concentration on what brings us all together - the educational process. What we are, where we are going and the methodologies necessary to get there must be understood, accepted by all of us, and part of our individual commitment to the mission of the college.

ADMINISTRATION

Central to the establishment and implementation of policy we have a group of people lovingly referred to as "the administration". This amorphous, often unidentifiable group of something, rarely receives credit for success, but is readily given the responsibility for failure. Administrators have the responsibility, but no authority. Faculty are characterized as having all the authority, but no responsibility. Students have no authority or responsibility, but they have all the power.

Seriously, we should devote a few minutes of our deliberations to the role and responsibilities of the college administration. Administration begins with the Board of Trustees. They have four overall functions: (1) the fiscal integrity of the institution, (2) the legal responsibility for the college, (3) to set board policies, (4) the employment of a president. Other roles can be assigned to the Board, but these four are their primary responsibilities. The President is the chief administrative officer of the college and carries out the policies established by the Board. In turn, the President employs chief operating administrators, usually in fiscal affairs, student affairs, academic affairs, development and alumni affairs, etc. These individuals answer only to the President and they serve as advisors on college policy and function. The dean or chief academic officer employs departmental chairpersons as academic administrators. Although the administrative chart may appear self evident, I delineated it intentionally.

ADMINISTRATION

Podiatric medical school administrators are similar, in many respects to business administrators. Both involve budgets and finance; purchasing and inventory, personnel and its hierarchial levels and maintenance and security. The problems facing us involve those also facing university administrators; how to deal with subordinates who are also peers, how to supervise faculty without stiffling freedom and motivation, how to blend fundamental principles and sound educational leadership and how to delegate responsibilities so they do not result in communication becoming either too vertical or ceasing to exist. We must look to business and management to devise imaginative approaches that reflect the needs of the faculty and our own abilities and deficiencies.

The ability to control, direct, and manage has probably become the key to adminis - trative success. The role that an administrator must assume, no matter by what title, is that of decision-maker, one who chooses from a number of possible actions in terms of predicted consequences.

Types of concerns or what motivates a decision to be made include desires, that which somebody wants; needs, that which is required to avert a problem; or existing problems or developing conditions that are undesirable. These concerns can exist singly or in combinations. The focus of concern of decision-makers is usually dependent on their level of responsibility and authority in a specific organizational context. The top or the managers, for instance are generally concerned with broad organizational goals. The middle or the administrative level is concerned with the strategies for attaining the goals, usually by specific activities or tasks necessary to achieve the objectives. The information that is characteristic and that has an effect on the quality of decision-making includes the quantity (know as much as possible), the relevancy, and the accuracy.

Not only does it reinforce an organizational structure, it also defined "administration" as an definitive entity. The "amorphous mass concept," enumerated earlier, has thereby been eliminated. Each administrator has a specific role, great responsibility and the necessary authority to do the job. If those factors infiltrate the college, communications and effective leadership will follow easily and naturally.

Selznick (2) believes that as professional educational leaders we have four major responsibilities: the definition of institutional mission and role, the molding of the institution to embody that role, the defense of institutional integrity, and the ordering of internal conflict. In all of these responsibilities the college administrators must be leaders and facilitators. Our role is, very simply stated,"to make it easier for the faculty to teach and for the students to learn." These two functions are the heart and soul of a credible institution of higher education.

While administrators must lead the way in striving for better programs, better performance, better teaching and better learning, we cannot attain those goals without faculty participation and reinforcement. The faculty has a right to be consulted, the right to disagree, the right to encourage and the obligation to warn. The faculty's opinion on policy decisions must be solicited, and in many cases it should be given more weight than any other factor.

While encouraging excellence and setting example, we must enlist faculty support, and we must effectively delegate responsibility to the faculty. A great institution cannot exist without a great faculty, but on many matters the faculty looks to the dean and/or president for direction and as administrators we must provide direction.

FACULTY

Faculty members are clinicians, teachers and researchers - the steel reinforcement of any academic program. They are not administrators, not fund-raisers, not contacts with government agencies and they are not fiscally responsible for a specific

program or the college itself. Administrators are employed to worry about such matters. The faculty forms the center of integrity of the institution. They are the learning process. They are the transmitters of knowledge and the generation of new knowledge. The interface between the student and the educational environment must be the faculty. The educational standards of the institution, the curriculum, the promotion and graduation of students, quality patient care - all of these belong to the responsibility of the faculty. Together with the administration the faculty sets the educational atmosphere in which students learn.

A curriculum molds the plan of an educational program and becomes a vital thing only if implemented by the faculty of an institution. Its effectiveness depends on the work of the teaching staff more than any other feature of the College (3).

As a specialist in a particular discipline of learning the faculty member has acquired an extensive fund of knowledge of the subject. How does one implement that knowledge into a curriculum and the learning process of students? During the three year podiatry curriculum study (2) this topic was discussed in detail. Of the many activities of the teacher listed therein, some of the more significant in the implementation of a curriculum are:

1. Establishing objectives for students to accomplish
2. Preparing the educational experience in an organizational manner (i.e. a syllabus for a course).
3. Preparation of the daily work, i.e. lectures, laboratories, clinic experience, seminars, etc.
4. Assigning work to students - per unit, topic, term, etc. In other words, what is expected with regard to lecture, laboratory, clinical rotations, textbook assignments, reference reading and other educational experiences.
5. Conducting the session in a professional, unbiased and objective manner.
6. Counselling students.

7. Evaluating the attainment of students.

8. Achieving order and discipline in the educational atmosphere to the benefit of all students.

The role of the faculty in creating new knowledge (or research) cannot be overstated:

> "Research is not a distinction or a luxury; no other investment in medicine has yielded greater dividends in improved patient care than a firm institutional commitment to pursue research. The basis for continued effective clinical training in podiatry rests upon the generation of new information derived from the research achievements of colleges of podiatric medicine" (4).

Unfortunately, due to lack of physical, fiscal and human resources our colleges of podiatric medicine have had to suffer the same disadvantages of intellectual isolationism as schools of medicine in the pre-Flexnerian era. A solution of this rapidly growing problem is to bring the podiatry school to the university, medical school or preferably health sciences center. The isolation of free standing schools of podiatry once perceived as tolerable, is now generally agreed to be limiting the growth of clinical research necessary to improve patient care. It is virtually impossible for the isolated podiatry school to train students adequately for research careers in podiatry or clinical practice without their education being based upon new information derived from the research achievements of colleges of podiatric medicine. Without intellectual interaction between a wide range of disciplines, creative discovery would degenerate into simple footnote gathering, and authentication would replace discovery. Progress in accommodating and curing diseases and disorders of the human foot depends upon those human and physical resources which a health science center could provide to a school of podiatric medicine.

In addition to clinical research endeavors, further research and/or investigation becomes necessary to explore such areas as the role of podiatric medicine in a multi-disciplinary health care system; the cost-benefit effectiveness ratio of podiatry departments in ambulatory clinics, hospitals or health maintenance organizations and the investigation of realistic podiatric manpower needs based upon the public's need for services. On a curricular level, intense investigation is necessary at colleges of podiatric medicine to construct curricula which are responsive to society's needs. This will involve the establishment of broadly staffed task analysis committees composed of podiatrists, physicians and members of the community at large. Their purpose will be to establish terminal performance objectives for doctors of podiatric medicine at the first professional level.

In order to properly carry out these clinical and nonclinical research endeavors certain physical and human resources must be available at the medical school or health sciences center. While certain research equipment might have to be purchased initially there exists for the most part, the potential for sharing of laboratory space and personnel within a school of medicine or health sciences center. This sharing of resources offers savings in initial laboratory construction costs, laboratory equipment and laboratory technicians. Savings are also envisioned through the sharing of medical school faculty.

This utility of cooperative sharing of resources, both physical and human, will foster not only fiscal savings but engender scientific exchanges which will promote, in the end, improved diagnostic and therapeutic rewards for the patient suffering from disorders of the foot and its contiguous structures.

The number of full time faculty members at each of our colleges has been minimal. While the numbers are increasing (now that our physical plants can accomodate a larger faculty) a dramatic increase will be necessary in the 1980's. Only with a full complement of faculty can we transmit and discover the knowledge

implicit as the task of an institution of higher education.

Furthermore, the new clinical faculty will have to be trained in sound educational principles of teaching and learning, and in the principles fundamental to scientific inquiry and research. Because programs of this nature are not available at the first professional degree level, we will have to train our own clinical faculty upon employment. Another solution to the dilemma is the iniation of fellowships for our graduates. These fellowships could combine postdoctoral education in a specialty area (rheumatology for example) with educational principles of learning and scientific research. Periodic faculty workshops of this nature become necessary. A combined program leading to D.P.M./Ph.D. degrees is another educational track that could aid us in training our clinical faculty.

CURRICULUM

A curriculum (the body of courses and experience that are developed and organized) enables students to achieve a stated purpose or purposes. It is an organized plan of teaching and learning. The curriculum represents the selection and organization of a body of knowledge, skills, traits, and attitudes which students will acquire through the course of education (2).

A curriculum should reflect the philosophy of education and training of the faculty and administration of that college. The curriculum must provide educational opportunites which permit each student to reach his/her educational potential in practice education or research. It must emphasize the preparation of the graduate for clinical practice; it must be flexible to reflect changing concepts of health care delivery; it must facilitate the integration and correlation of the basic and clinical sciences; it must provide for free time as well as elective subjects so that the student may learn self-study as a basis for the continuous education necessary throughout professional life; it must be individualized to accommodate the slower student yet challenge the exceptional student; and the allocation of instructional time must be on the basis of subject matter content necessary to fulfill specific

educational objectives rather than an historical or conventional class schedule.

Despite the recognition of these idealistic standards of a curriculum, many educational institutions have difficulty meeting such standards. This is particularly true for the colleges of podiatric medicine because of the changing nature and evolution of podiatric medicine as a medical specialty. The advent of the Selden Commission Report, the 1970 Podiatry Curriculum Study, increased availability of hospital privileges for podiatrists and the availability of federal funds have substantially affected the education and function of the doctor of podiatric medicine in the health care delivery system. Because of these profound changes the podiatric medical curriculum must be revised in order to keep abreast of the rapidly expanding growth of knowledge and the influence of that knowledge on medical education and medical practice. These changes may mandate a redefinition of the education and practice of the Doctor of Podiatric Medicine.

Our curricular difficulties, and those of most of the schools of the other health professions, can be summarized as follows:

(1) Schools do not develop their curriculum based upon an objective evaluation of the needs of students at the first professional degree level nor does the curriculum reflect the needs of the profession, the general public nor society as a whole.

(2) The curriculum is usually written in broad, meaningless language, in outline form and in a manner which prevents intelligent additions and/or deletions.

(3) The curriculum does not enable the student to develop self-paced studying habits.

(4) The rationale for clinical rotations as part of the curriculum is ill defined.

(5) Students often do not know what specifically must be accomplished at the conclusion of a particular course in study.

(6) The evaluation of the curriculum both in the classroom and in the clinical areas is difficult, if not impossible, because faculty are unaware of what they must

evaluate.

(7) Student performance cannot be measured because an outline of specific tasks the student is to accomplish is not available.

(8) Faculty cannot be evaluated in terms of following curricular guidelines because what must be taught is poorly defined or not defined at all.

Curriculum development, innovation and evaluation, then, becomes a primary responsibility of a college of podiatric medicine. Curricular modification must be paramount in colleges and universities. However, because of the current evolution of podiatric medical colleges, attention to our curricular difficulties is critical to our success as an independent health profession. The Council on Podiatry Education has completed its basic skills project. The project had as its goal the identification of the minimum skills necessary for a graduate D.P.M. That project must not terminate with the identification of these skills. These skills must then be translated into a competency based curriculum complete with the instruments necessary to evaluate the skills of each new graduate. Until we (each college and A.A.C.P.M.) carry clinical competency to this logical conclusion we have not fulfilled our responsibilities as educators. And - if we choose to ignore this challenge, you can be certain some outside agency will do it for us!!

ADDITIONAL RESPONSIBILITIES

Mission, administration, faculty and curriculum are <u>the</u> four responsibilities paramount to the development and maintenance of a quality educational program. I believe that if we succeed in these challenges our other responsibilities will follow logically and appropriately. You might rightfully ask - what other responsibilities?

Most of these are even more self-evident than the four I have addressed. However, they deserve brief mention.

An appropriate physical plant certainly makes the educational program more attractive and facilitates the responsibilities of the faculty and students. All of our colleges have either remodeled existing buildings or provided new construction in the last ten years. Therefore, the physical plant is not "the problem" it was in the 1960's. Although, we can dispense with any major considerations of new buildings, one word of caution is necessary. The educational programs, the needs of the faculty and students, newer technology and just plain "progress" soon cause obsolence in new or remodeled structures. The dilemma cannot be prevented. Long range planning can make the evolution easier to accept.

Another educational resource often forgotten is the library. Quality education is impossible without the accessibility of print and non-print media usually found in a college library. Literature resources are second only to the faculty who usually produce the material in the journals and textbooks. Podiatric medicine has not addressed this issue in the proper perspective. I place research (and the production of the literature) as one of our greatest weaknesses. While it is changing rapidly within each of our colleges, it needs greater emphasis by college administrators and faculty. Research provides faculty with motivation to be better teachers

The remaining self-evident resource is that of the students. They are the heart and soul of the future of any profession. Therefore, they must be nurtured, educated and given the responsibility expected of a professional student. I do not believe they have the responsibility for running the college. They can assist us in the identification of problems. And, if the identification is correct, then the faculty and administration must resolve the conflict(s). Students are often an untapped human resource. Critical to the development of that resource is good example and role models from faculty. Students judge the profession on what they observe in the college faculty and administration.

CONCLUSION

My objectives in this presentation were to introduce you to the topic, provide you with some philosophy in educational administration and, hopefully, challenge your thought processes prior to our workshop. I have reviewed the more obvious educational components required at the first professional degree level. Most, if not all of them, we take for granted. And we never relate them or their purpose to the educational process. I hope this introduction to our responsibilities will facilitate your comprehension of their roles in teaching and learning - or in the transmission and generation of new knowledge. After all, that is what it's all about - isn't it??? I hope so!

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CONSIDERATIONS IN DETERMINING THE SETTINGS IN WHICH CLINICAL EDUCATION IS PROVIDED

ROBERT G. BALLARD, D.P.M.

WEDNESDAY, MARCH 21, 1979

DIDACTIC II

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Considerations in Determining the Settings in Which Clinical Education is Provided

Each of the colleges of Podiatric medicine is obliged to supplement their on-campus clinic with off-campus programs. Such programs develop to some extent with the need for more patients because of increased enrollments. That this is not the only reason, however, can be seen from the fact that while the enrollment at, for example, the Illinois College, doubled in the last seven years, the number of external programs increased tenfold and more. Originally, the colleges were willing to accept just about any facility where clinical exposure was made available to students. As podiatry has gained greater recognition among the health care professions, the demand for podiatric services has increased. The demand was further augmented by an increase in the senior citizen population of the country and by the tremendous surge in health motivated sports activities such as jogging, racket ball, etc. With the increased demand for podiatric services, the time has come to be more discriminating and purposeful in the establishment of off-campus training programs.

Purpose and discrimination, however, have to do with priorities, goals and objectives. These ultimately are based upon a philosphy of podiatric education.

The philosophy of podiatric education has not yet been definitively formulated, and the profession is still groping for clearcut directions.

The current philosophy might be: To transmit a body of medical knowledge and basic clinical skills and to evoke the formation of a set of values so that the graduate can make valid decisions and implement those decisions with effective actions in the treatment of diseases of the foot.

This philosophy serves as a basis for goals and objectives, and it is the goals and objectives that will determine the settings in which clinical education is provided.

The broad goal flowing from the above philosophy is to furnish students with necessary instruction, means, and opportunities so that graduates are qualified to give primary podiatric care. These goals are more clearly specified by defining "primary care." Although not the only one possible, the following definition has been adopted by the Illinois College:

A Primary Care Podiatrist Is:

1. An entry level practitioner
2. Capable of diagnosing general medical conditions in addition to specific foot problems.
3. One who can provide care for common foot problems within an office setting, or in a hospital if it is in the best interests of the patient.
4. One who can refer the patient to other specialists or health providers (within or outside of the profession)

To make the growth development of such a practitioner possible, the college of podiatric medicine must provide a core of clinical

experiences to all students in the same degree of time and intensity. What this core should provide may be as difficult to determine as a core curriculum in an undergraduate program. But the effort to determine and delineate it must be made by every school.

Along with this core of clinical experiences, a competent instructor and/or director is needed who has:

a) the capacity to teach
b) organizational abilities, so that experience can be provided in orderly and progressive fashion, without waste of students time and effort.
c) a capacity to evaluate both the effectiveness of the program and the learning outcomes in the student.

The backbone and mainstay of such a core of clinical education must be within the teaching institution. None of our schools -- certainly not the clinic of ICPM -- can provide all the clinical experiences our faculty considers essential to the core curriculum.

Therefore the first category of considerations determining the settling of clinical education refers to clinical educational experiences minimally available in the college setting. For example, a neurology rotation has been functioning for some time at the Rehabilitation Institute of Chicago, and a physical therapy rotation at the same institution is now under consideration. Programs at the Neighborhood Health Centers of the Board of Health were established with an eye to using the large population of infants and young children in a screening program enabling the student to differentiate between normal and abnormal feet in various stages of development.

A second category of consideration is the need for students to be in a multidisciplinary facility of a general hospital where they can relate to other professionals as equal members of a team. It is important that students get out of the podiatric nest, out of the sheltered relations of the college clinic to learn to fly in the conflicting, but exhilirating currents of the health-care atmosphere. It is important for their own professional development as well as for the growth and development of other health care professionals. Better care to patients can be provided in such a setting for clinical education.

A third category is to provide an adequate variety of electives for the specific interests of individual students and the needs of communities in which they will find themselves.

At this point, it may be opportune to speak of a couple of distinctions in terminology for the sake of clarity. The AACPM has designated as an "externship" or an "external program" a setting of clinical instruction in an institution which is formally and/or permanently affiliated with the school. The affiliation of such an institution is part of the ongoing clinical program of the school, open to a sizable portion of the student body. The term "Clerkship" has been applied to a program worked out by the individual student with a practitioner or an institution under the guidelines established by the school and with its approval in each individual case. Both of these should be distinguished from a "preceptorship" which is reserved for the postgraduate relationship between an established practitioner and a newly graduated D.P.M.

A fourth category of consideration in determining settings of clinical instruction is the interest or need of the school to maintain clinical instructions in a setting that is aimed at giving visibility to the profession. An example of this may be cited in the externship program established at the University of Illinois Hospital for geriatric and drug abuse patients with the hope it may lead to closer collaboration with the Health Science Center of the University of Illinois.

A fifth category of consideration is an urgent need in the community for the kind of service that can be furnished by the student for mutual benefit. During the years the student is acquiring a body of knowledge and skills in the art and science of healing, he does so as a member of a community, a part of its problems and its aspirations; during those years, he makes his own set of ideals and ethical values. For this reason we have maintained programs, especially for third-year students in several senior centers, a sector of the community somewhat neglected by health-care professionals and by politicians. The senior citizens are more likely to stay alert, mobile, healthy and alive if they can fulfill their social, economic and health-care needs at the same place.

In considering the needs of a community, the response of the practicing podiatrists in the area must not be overlooked. A qualified practitioner chosen from the ranks of the practicing podistrists should be placed in charge of the program. There should be openness and communication in the process, with the assurance that both the podiatrist and podiatry will benefit from the liaison..

A final category of consideration in determining settings of clinical instruction is the need of the students to have a sense of control over their education. This is possible by giving them a choice of settings in the externship programs, especially in office clerkships. In this setting, students have the feeling of a personal relation to the master and the geographic area. From the school's point of view these settings are desirable for a number of reasons, providing the quality of instruction can be maintained. Among the most important reasons are that the students' education should be enhanced by exposure to a greater variety of instructors, office management techniques, population groups, health-care delivery systems and governmental agencies. Enthusiasm and motivation to learn are generally high.

An attempt to maintain quality control of instruction during clerkships is embodied in the following provisions. On the part of the practitioner:

1) Verification of his license and malpractice insurance.
2) Proof that he has been in practice several years and not related to the student.
3) A description of the program outlining the schedule and the areas and/or specialities to be offered to the student.
4) A provision that the prospective instructor has hospital affiliations.
5) A provision that the practitioner will give a clinical evaluation of the student's performance.

An evaluation of the clerkship should also be made available to other students so that each can made a well-informed decision as to whether or not the program would satisfy his needs and interests.

Whatever the setting of clinical education, it is imperative that students find the program challenging and instructive and inspiring as a model of performance.

A RATIONALE FOR COMPETENCY BASED CURRICULA FOR EDUCATING AND ASSESSING HEALTH PROFESSIONALS

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Thursday, March 22, 1979

Didactic III

"A Rationale for Competency Based Curricula for Educating and Assessing Health Professionals"

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Introduction:

The collaboration between content and process experts in the field of education can be made most evident and effective in the education of health professionals. Unfortunately these supportive relationships, between the clinician and educationist, which might be considered requisite to conducting a scholarly and academically rigorous educational enterprise, have been difficult to establish. Clinicians have displayed a mordicium of arrogance towards the educationist since their prior training they believe to be essentially sufficient to be a teacher. The educationists have sometimes persisted with insistence on style and form rather than substance and allowed their jargon to obscure the power contained in their techniques.

The bridge between the clinician--academician and the educationist-faculty is essential to improvement in the assessment of any learner's progress towards clinical competence. The practicing podiatrist as a clinician-academician in this discipline area should always be the determinator of content while the educationist-faculty should actualize the various techniques of education which will, with greater assurity, enable podiatry to train and maintain the competence of podiatrists. As colleagues it should thereby be possible to bring a scholarly approach to our educational enterprises and put podiatry in the vanguard of the re-emergence of consistently applying educational strategies to the training of health professionals.

Assertions:

In the development of competency based curricula, it might be asserted that:

1. Whatever is done to clarify the appropriate competencies must be perceived by the public to be to society's benefit and meet a carefully specified health need.

2. It is the obligation of the profession to ensure that its educational enterprises are consonant with the rationalized needs.

It seems likely that unless these are accepted as basic assumptions then as a health discipline, podiatry will gradually lose its credibility. Society will be most critical when it discerns that it is illserved by the appearance of competence and semblance of a cure rather the substance of having a service provided that results in a resolution of the problem or sense of improved well-being.

A FOCUS OF ACCOUNTABILITY

The Public Perception:

The public, co-incident with a general suspicion of all providers during the past decade, has become dis-satisfied with its implicit delegation to health professionals of the responsibility for assuring the availability of competent practitioners. Yet, it is customarily not within the capability of a member of society to determine whether a given practitioner is competent. The level of understanding and sophistication usually means that the public is unable to discern competence, but there is a definite personal appreciation of the care provided not meeting expectations. Presently in our society, a climate of inquiry and reappraisal has replaced one of unquestioning acceptance of the opinions of experts.

This then places a heavy burden of responsibility on health professional groups, however they are differentiated into certain categories of disciplines, to show that in training their health manpower the right numbers in the right distribution with the requisite competence level are trained. Additionally, we can reasonably infer that it is the training institutions, the colleges and schools, which have to carry the heaviest burden of demonstrating their accountability to society.

Conceptualizing Health manpower Requirements:

Before it is possible to rationally specify the health manpower requirements and needs for the delivery of health care in the U.S.A., an organized system for the delivery of various kinds of health services has first to be articulated and defined. Yet this poses a problem, since the health care delivery system in the U.S.A. is not a closed system, such as the "socialized" organization of health services in some foreign countries (e.g., Great Britain and Sweden), but rather an open "Pluralistic System."

Dr. William Steward (USPHS, Surgeon General 1965-1969) once described the U.S. health care delivery system as:

> "our emerging system of medical services, a system which is neither 'state medicine' not 'socialized medicine' nor 'private medicine' but a combined public and private effort for comprehensive health care in every American community."

Hence, attempts at making health manpower projections in this country, and thereby define needs, has proved to be a hazardous venture. It has led many an investigator and health planner to throw up their hands in disgust. The reason being of course, that defining the recommended numbers and mix of health professional becomes essentially an intuitive exercise, because demand for specific kinds of services in the system are

not rationalized. As society's needs are currently defined, they become available through various training opportunities, and hence become the determinator of the kinds of services in the health care delivery system we will have.

The U.S. Health Care Delivery System:

While is it not possible to currently define the specifics of our current health care delivery or even define the nature of the linkages that should exist between elements in the public and private sectors it should be possible to delineate certain generic principles which might be considered as criteria for judging the appropriateness of the various components in the pluralistic system:

1. Accessibility
2. Availability
3. Acceptability
4. Phased implmentation, assuming that the system is able to accept the increased demand before money is poured into health care.
5. Minimal government regulation
6. Consumer participation in the cost and in the organization of of services.
7. Quality assurance,
8. Cost predictability

The Goals and Objectives of a "Pluralistic System":

Presumably the foremost goal of a health care system is a rising level of health for the entire population. The 1971 Sun Valley Forum on "Personal Health Care and Financing," articulated the objectives subsumed under achieving these goals as:

a. Equity among persons in access to care,
b. Compassion, dignity and humanity in the delivery of health sevices
c. Personal security that flows from the advice and concern of competent professionals,
d. Amelioration of undesirable effects of income distribution patterns by overcoming some of the handicaps of poverty,
e. Achievement of health-related goals without excessive use of resources in relation to resources available for competing social purposes and goals.

The Perloff Committee of the American Hospital Association in its 1970, "Ameriplan Proposal" recognized the broad spectrum of ease and difficulty associated with changing to a more responsive and pertinent systems which will meet our health care needs. Some changes will require few adjustments while others will call for long-range planning and large investments of

money and manpower. The following is an abbreviated form of their defined goals for a health care delivery system:

i) The primary objective of the system has to be the optimun health care of each and every person.

ii) The system must focus on individual needs, must be personalized through the skills and humanity of health personnel, and must preserve the dignity of the individual.

iii) It must assure that no person becomes financially dependent or suffers loss of dignity as a result of illness or accident.

iv) It must assure that all children are provided with preventive care and that no child suffers from untreated illness.

v) It must be comprehensive in scope, including the following components as needed by the individual health maintenance, primary care, specialty care, restorative care and health related custodial care.

vi) It must provide financial incentives for encouraging utlization of ambulatory facilities, extended care and nursing home facilities.

vii) It must be re-oriented towards the maintenance of personal good health and to the prevention of illness.

viii) It must support those providers (both institutional and individuals) that meet standards of effetiveness, quality and efficienty.

ix) It must include the private as well as the public sectors in its delivery of health services.

x) It must be designed to provide care for persons suffering from alcoholism, drug abuse and acute mental illness.

xi) Programs to resolve these sociological and environmental problems that affect the health of individuals must be coordinated and integrated with the system for delivery of health care.

Conceptualization of Health Care Needs:

Since definition of the health care system and determination of health manpower requirements are thereby the reverse and obverse of the same issue, clearly there is a need to step back and make some kind of assessment of health care needs. There is a need to conceptualize or provide a taxonomy of the variety of "health problems" that an individual might have, irrespective or whether they seek medical attention.

Several years ago, Sidney Garfield, M.D. of the Kaiser Permanente Group in California, characterized persons with "health problems" as well, worried well, early sick and late sick. The individual will present themselves to a health professional with what they perceive as a "health problem" in need of some kind of remediation. When the health professional has completed the several steps of problem identification, including data gathering (history and physical examination), preliminary assessment, ordering of special tests, analysis of the information, the result is a "problem-diagnosis" or identification. These "problem-diagnoses" will be assessed then for their severity, i.e., is this individual essentially well, worried well, early sick or late sick. Then a determination in made to the appropriate level or complexity of the treatment plan or program of management for the identified "health problem." Depending on the availability of manpower and technical resources, which may provide a variety of constraints, the "health problem" will thereby be dealt with and possibly resolved.

The assessment of the severity and complexity of the "health problem" thus becomes a method of beginning to identify health manpower needs. The more severe and the more complex the "health problem" then the more likelihood there is the need for a highly trained expert with in-depth knowledge. This expert will be knowledgable in the utilization of highly sophisticated laboratory and investigative procedures and can apply complex technical treatment and management techniques.

Yet the dimension that is fundamentally lacking still is a determination of the prevalence and incidence of severe and complex "health problems" requiring the services of highly trained experts or specilists.

The current thinking, substantiated by only a few studies, is that 90-95% of "health problems" are relatively easily diagnosed (i.e., of low complexity.) An analysis of patient/health practitioner interactions demonstates the low level of severity and complexity or these highly prevalent or incident "health problems." This would seem to imply that an individual with a "health problem" can most commonly be treated expeditiously, at low cost and competently by qualified health practitioners who do not need to be broadly facile in sophisticated and complex technology.

Definition of Primary Care:

In light of the above discussions it may be a mis nomer to use the term "primary care" in connection with podiatric practice. This term has come to have a consensus meaning in medicine which encompasses much more than "first contact" medicine (1). The four essential components to "primary care," in defining who a primary care provider is, are:

accessibility
availability
comprehensiveness
continuity

Accessibility is used in the context of the provider being accessible for a "first contact" of interfacng with health care delivery system, irrespective of the presenting complaint.

Availability is used in the context of the practitioner being in the appropriate geographical locale and able to command all the resources needed to manage 80-85% of presenting complaints.

Comprehensiveness is used in the context of providing a broad range of diagnostic and therapeutic services.

Continuity is used in the context of the practitioner being a gatekeeper in the system with appropriate referral of patients to consultants and yet maintaining continuity of care.

It might be submitted that the podiatrist can only be a primary care provider for the foot and hence, in the context of this broader definition could not be designated a primary care provider in the U.S. health care delivery system. This observation is offered so that podiatrist do not get caught in the situation of claiming that they are "competent" primary care practitioners (2).

For summary it is the production of competent health professionals that really determines the mix of services available to the society rather than a health care delivery system with existent specifications to which our educational programs can simply respond. This is both a strength and a weakness, giving flexibility and a need to be evidently responsive and responsible as health professional groups.

DEFINITION OF COMPETENCE

Two assertions:

1. The quality of patient care rendered is primarily dependent on the competence of health care practitioners

2. The recipient of medical services should be able to rely on the health professions to devise mechanisims which will ensure provider competence.

In the health professions there is an evident tight and immediate feed back loop that can be used to determine the public's satisfaction with a service being competently provided. The following conceptualizations might be used to develop a competency based curricula or agenda for podiatry.

The Definition of Competence:

Although each health professional is a key component in the delivery of health care and the achievement of "health" for the population, each practitioner is only one factor in the array of forces affecting these issues. Therefore, if systems are to be developed that attempt to measure the competence of a health professional, care must be taken to measure only those elements for which the provider is appropriately accountable.

If for example, the public refuses to meet certain housing or sanitation standards that are necessary to prevent repeated episodes of diseases, reinfection of the clinician's patients surely does not reflect on the clinician's competence. Similarly, if a podiatrist provides appropriate advice and counsel to patients, and they knowingly refuse to comply, it is inappropriate to hold the podiatrist solely responsible for an adverse outcome. Thus, while it is important to try to link the measurement of professional competence to the outcome of care and the quality of health, it is vitally important that these measurements be limited to those factors which the provider can appropriately influence or for which he or she can reasonably be held accountable.

A second caveat tha bears stressing in any consideration of what constitutes competence is the need to distinguish between the acquisition of knowledge skills, and attitudes and their utilization. While it is impossible to utilize knowledge that is not possessed, it is quite possible to possess knowledge that is not utilized. The final desired behavior is knowledge utilization; therefore, as far as possible, efforts to measure competence should encompass both knowledge possession and its utilization in clinical practice.

Competence, then, shall mean the knowledge, skills and professional behavior (or attitudes) necessary to provide adequate patient care. A convenient way to further clarify the use of these terms, knowledge, skills and professional behavior is a schema tha relates them to customary educational terminology and the outcome measures related to adequate patient care.

Knowledge in the lexicon of the educator relates to cognitive capabilities which range from recall through analysis and synthesis to problem identification/

solving processes. Skills are those psychomotor characteristics that are involved in completing a task requiring some manual dexterity. There is a degree of artificiality in making this distinction as skillful completion of a task must clearly require knowledge, povided with a "caring" attitude. Figure 1 demonstrates the relationship between the components of competence.

Attitudes and personal values are akin to the examination of the affective components which, as every educator knows, is probably one of most difficult areas to define, measure and prescribe. Some have attempted to demystify this area and limit the expression of this facet to examination of communication, management and educational skills in the practitioner. Even others have attempted to develop a grid in which these three primary attributes are related individually to patient care, administration and teaching skills. (3) Figure 2 shows these relationships.

Clearly all these attributes are inter-related and when competence is to be evaluated, from a practical standpoint, performance and professional behavior are to be examined. These are inextricably related and constitute the essence of the problem in eliminating those who are less than adequately competent.

To provide a succinct view of competence, the following might be used as a way of conceptually viewing its distinction from performance.

Competence is readiness not currency.

Performance is doing not ability.

Before passing onto the second area of philosophical discussion a final commented about professional behavior. Increasing attention is being given to the physical and mental health of the physician practitioner. Not only is there recognition of the old maxim "physician, heal theyself" but the need to identify in a non-punitive way, those found to have some form of chemical dependency, character disorder, behavioral abnormality and other attitudinal problems. A vigorous approach to identifying the "impaired" physicians in this country has begun and sophisticated confidential state-based remedial programs have been implemented.

The Continuum of Health Profesions Education:

It is widely recognized that the increasing rapid expansion of knowledge and related technologies makes learning throughout a professional career essential to safe practice. To achieve excellence requires an even greater commitment of time and energy to life long learning. There appears to be agreement that renovations of basic programs are required to assure that graduates are established in patterns of independent learning. Yet reports of success are few and far between.

It is apparent that prepatory education is the foundation of professional competence. In fact, current activities in curriculum revision in medicine are emphasizing achievement of competence and performing certain specified acts. This constitutes a movement away from the somewhat mad situation of "holding time a constant and allowing achievement to be a variable."

Some have concluded that institutions might more effectively promote life-long learning by basing educational activities on certain assumptions. These assumptions have important implications for the design of educational activities and hence focus on process rather than content.

This has been simply and eloquently stated by Dr. John S. Millis:

> "We can no longer speak of medicine as learned profession: rather, we must speak of it as a learning profession. --Thus, we can no longer think of mastery as an achieveable event but as a continuing process. The physician must be regarded as one engaged in a continuing process of learning his profession, not as one who has merely learned it at some time in the past.

It has been hypothesized that if learning were based on these assumptions, then health professions students would be better able to provide optiomal achievable patient care throughout their careers. The assumptions focus upon issues that have been discussed widely by adult educators during the past decade. They have found great acceptance in theory, have been tested in practice, and have proven effective in diverse areas of adult education.

The assumptions are as follows (4):

a. Intrinsic motivation results in more effective behavior modification than does extrinsic motiviation (reward and punishment).

b. A supportive, collaborative, mutually respectful and comfortable learning climate facilitates the learning process.

c. Active involvement of the learner in his own educational activities facilitates the learning process

d. Mutual evaluation (learner involvement in the evaluation process) serves to motivate more effectively than evaluation that excludes the learner.

e. Learning is facilitated when it takes place in a manner, time, and place convenient to the learner.

f. Learning activities are considered more relevant if they are based on the individual's perception of a performance deficiency as related to patient outcomes.

g. Criteria (competency) based learning is more effective than learning based on rigid time constraints, i.e., criteria become the constant and time becomes the variable.

h. Explicitly stated learning objectives result in better outcomes than do implicit objectives.

i. The determination of an individual's most effective learning styles and the design of learning activities based on those styles facilitate effective and efficient learning.

j. Development of learning process skills facilitates the development of an efficient life-long learner.

k. The self-discipline essential for self-directed learning occurs only when the learner perceives a need and has the skills to engage effectively in learning projects.

l. Role models projected by instructors/facilitators affect the development of the learner in each of the behavioral domains, cognitive, affective, and psycho-motor.

In addition to the preceding, assumptions, the following four suppositions can be identified that relate more specifically to issues in patient care.

1. The dualism of medicine requires a thorough understanding of both the scientific method and the humanistic process. The scientific method recognizes that problem solving skills are important to effective patient care and include the ability to determine the real or underlying problem from the symptom, verifying the problem, defining the positive feedback loop that is reinforcing the problem, defining alternative solutions and choosing the best solution to solve both the problem and destroy the positive feedback loop. In addition to the scientific method, it is becoming increasingly apparent that a humanistic approach in the practice of medicine is mandatory. The most important aspect of this appears to be giving the physician an opportunity to understand himself and thus his patient.

2. Medical knowledge is expanding at such a rapid rate in such a diversity of fields that the team approach to patient care is more likely to be the method of the future than individual patient management. This then implies that possessing managerial skills will increasingly affect the effectiveness of health professionals in the future. Research indicates that a result-oriented, shared decision making system of management is more effective than an authoritarian management system.

3. There is an increasing ability for medical science to utilize resources and diminishing amount of resources available. This probably has led to the current demand by society for professional accountability. Therefore, we must learn to use our resources efficiently and to document

our decision making process. Decision making is based on knowledge and is heavily influenced by attitudes, beliefs, and values. Therefore, the ability to clarify one's values will facilitate effective decision making.

4. The active involvement of the patient in the decision making process concerning his management regime will result in better patient outcomes. Effective communication leads to productive interaction and includes the attribute of empathy and the skill of feedback.

To conclude this part of the philosophical discussion then, the notion of continuing education should not be limited to the maintenance or recapturing of old skills but rather an approach to learning that applies to all levels of training. This has been succinctly stated in the following way (5):

> "At present, programs for continuing education in the health professions are constructed largely on the model of academic pre-professional education which is controlled exclusively by subject matter and conducted primarily to disseminate information. This approach to learning stems from the prior educational experience of those planning the program as they generally lack sufficient knowledge about adult learning and instruction to do otherwise. Further more, as a result of their prior experience in pre-professional education, those for whom programs are planned resist educational activities that violate traditional conceptions regardless of their efficacy for learning.

Since the traditional approach to education is not fulfilling the need, continuing education for health professionals must seek new directions."

The Process of Credentialing:

Credentialing in the health professions is in a state of disarrary. It includes registration, certification, licensure, membership in professional associations, hospital or clinic staff priviliges and the attainment of a degre in a field. All are intended to show that a person is entitled to credit or has a right to perform a distinct function.

An attempt was made to clarify some of these credentialing terms by the Department of Health Education and Welfare (6).

Credentialing: The formal recognition of professional or technical competence. As used in this report, "credentialing" is a generic term referring to the processes of accreditation, cetification, and licensure.

Accreditation: The process by which an agency or organization evaluates and recognizes and institution or program of study as meeting certain predetermined criteria or standards.

Certification: The process by which a non-governmental agency or association grants recognition to an individual who has met certain predetermined qualifications specified by that agency or association.

Licensure The process by which an agency of government grants permission to an individual to engage in a given occupation upon finding that the applicant has attained the minimal degree of competency necessary to ensure that the public health, safety, and welfare be reasonably well protected.

Figure 3 is a summary of some institutional and program credentialing processes.

Historically, accreditation of educational institutions and programs has been a voluntary non-governmental process which aims to assure the quality of education. It has developed within higher education to preserve freedom from political interference.

Three goals might be cited as the purposes of accreditation:

1. protect society from mediocrity in educational process,
2. protect students from being fleeced or hoodwinked, and
3. protect professionals from being downgraded by incompetents.

The focus of the current debate is whether the emphasis in accreditation should be on the process of education or the product. Standards and criteria must be shown to be relevant to achievement. Some urge that priority in accreditation be accorded to the public interest rather than towards he needs of educators, educational institutions and of professional groups and sub-groups in our society. They also believe that higher education once regarded as the route to a "good life" for individuals has become a prime instrument for the enhancement of national power and societal transformation.

The increased flow of public funds into higher education has "tightened up" the process by which the U.S. Department of Education accepts an educational institution as accredited. Some groups in reviewing the voluntary accreditating agencies have developed a growing concern that the legal right of members and applicants may be jeopardized by the accreditation process. Nonetheless continuing consensus on the goals of accreditation in higher education remains and a shift towards the interests of the public is advised. Perhaps the concern about process and product can be restated as an increased understanding that while the academic factors such as libraries and qualified faculty are necessary, they are not sufficient to assure quality. Accreditation of educational institutions is challenged to focus its attention on the public interest, on the product not the process, an on the selection of criteria which are sufficient as well as necessary (7).

Certification and licensure are the two other main factors in credentialing and are the usual methods of recognizing professional or technical competence. All attest that a persn is entitled to credit or has a right to perform a distinct function.

Three goals can be cited as the purposes of these two othe credentialing mechanisms.

- providing services for treatment of disease and maintenance of health.
- provide assurance regarding qualifications of personnel.
- assure individuals opportunities for geographic movement and career mobility.

Some have observed that these credentialing functions should be the sole responsibility of government on behalf of the people although they are currently delegated to the professions in most jurisdictions.

As occupational groups move towards professional status, they frequently move through a progression in credentialing from:

- attainment of degree (or diploma) in an accredited program
- registration in a job classification series
- membership in professional associations
- certification as a specialist in a circumscribed field

An interesting but often overlooked aspect of credentialing is that the process is generally additive. In the practice of medicine, a specialist's certification is added to the general license to practice. The real question is probably not whether it is legal for a certain person to carry out a practice act but whether it is safe and appropriate. The present state licensing legislation probably does not prevent unqulified persons from practicing but it does result in rigidly structure categories of health personnel who are not efficient in the delivery of health care services (8).

The development of an orderly process of credentialing in the health field, to assure high quality health care to the public and to promote geographic and career mobility to individual health professions, appears to be a must. Assuming some form of legislative initiative is necessary to accomplish this, arrival at a consensus on a plan and to implement it will require discussion and compromise between the various interested paties, public governments, professions and employees. The only certainty is that it will take a very long time to effect an orderly system for credentialing of individuals who are engaged in all phases of health car delivery.

Interface Assessments:

The critical points in the podiatry continuum appropriate for competence assessment appear to be (a) completion of podiatric school (undergraduate), (b) completion of specialty residency training (graduate), and (c) periodically throughout the practice life of the podiatrist (continuing). Thus, any licensure mechanism should address itself to provisions for becoming a podiatrist (The undergraduate-graduate interface), an independent podiatrist (the graduate-independent practice interface) and relicensure or reregistration of license.

These interface evaluations require a process both for external and internal assessment. Thus, at the undergraduate-graduate interface assessment might require an examination authorized by the Podiatry Practice Board (external) and a certification by the Dean of the School or College of Podiatry attended (internal). At the graduate independent practice interface, it might require an examination approved by a specialty Board (external) and certification by the institution where the residency education (internal) occurred. Although not stated, in both instances it is presumed that, until the state of the art in evaluation improves, the external evaluation would predominantly assess the cognitive level and address the possession of knowledge whereas the internal evaluation would an assessment of the utilization of knowledge, skills, and attitudes.

Much of the current debate concerning continuing competence devolves around the methods of periodic evaluation at the continuing or relicensure level. There appears to be a general agreement that some new methodology for evaluation in this area is necessary. Both internal and external evaluations are needed although there are likely to be significant differences in emphases. These evaluation techniques have been summarized as follows (9):

1. Traditional examinations

   Paper and pencil - multiple choice question or essay
   Patient-management problems
   Oral examinations

2. Computer-based examination
3. Simulation models and audiovisual simulation
4. Audit

   Audit of behavior - behavioral checklists
   Audit of record
   Self-audit by questionnaire
   Assessment of outcome

5. Peer Review - foundations or PSRO
6. Appraisal by seniors
7. Educational background
8. Resume of past performance

It seems logical, at this point to relate whatever internal or external evaluation occurs as closely as possible t the nature and characteristics of each podiatrists practice.

Establishment of Systemmatic Linkages:

There appears to be many disconnected elements to the development and assurance of continuing competence among health professionals. The following would appear to be essential elements designed to act either voluntarily or by regulation, as controls on podiatrist's performance.

(a) Development of patient record forms for use in hospitals and offices, standardized around the primary purpose of effective health care evaluation.

(b) Development of regional and/or national computer data centers for storage, retrieval and statistical analysis.

(c) Development of standards of optimal care as a basis for judgement of individual podiatrist and hospital performance.

(d) Development of licensing standards for admission of podiatrists and hospitals into the system.

(e) Development of standards for continuation of podiatrists in the system.

In some quarters there is a growing consensus that certain principles should exist in any linked system (Figures 5). These relate to the monitoring process the maintenance of competene and the enforcement/rehabilitation process.

Within the system it has been suggested that the application of self-directed learning is likely to be most effective. This androgogical learning appears likely to be a more effective approach to the training of health professionals.

> The body of theory and practice on which teacher-directred learning is based is often given the label "pedagogy," from the Greek word paid (meaning child) and agogus meaning guide)--thus being defined as the art and science of teaching children.
>
> The body of theory and practice on which self-directed learning is based is coming to be labeled "Andragogy," from the greek word, auer (meaning adult).--thus being defined as the art and science of teaching adults.

Figure 6 shows a comparison of pedagogical and andragogical learning developed by Dr. Malcolm S. Knowles.

The Learning Contract:

One method of ensuring that in the application of andragogical principles is the development of a learning contract.

The Learning Contract as adapted by Malcolm Knowles, Ph.D., provides an objective plan for the learner to develop for presentation to and discussion with the Program Director. The Learning Contract should cover a specified period of time such as six months or one year.

The four basic elements of the Learning Contract are:

1. Identification of Learning Objectives by the learner. This involves a process of self-diagnosis in determining content and process skills to be developed during the period specified in the contract. In addition to skills, the learning objectives should include specific knowledge to be learned and attitudes and values to be considered.

2. The Resources and Strategies element indicates the learning resources which will be used to chieve the learning objectives and the manner and sequence in which they will be used. Resources of the VA hospital, the medical school, the community and others should be included.

3. The Evidence of Accomplishment is the portfolio which the learner presents as an indication that the learning objectives has been achived. Examples are performance ratings, bibliography of readings, written reports, etc.

4. Criteria and Means of Validating are the measures by which the Program Director will determine whether or not the Learning Objectives has been satisfactorily completed or achieved.

The Learning Contract is a way of formalizing self-directed learning on the part of the learner with the teacher (program director or preceptor) as a helper.

Quality Assurance Programs:

There is a solid basis for believing that it is the clinician's practice of excellent health care delivery and its continuous monitoring that has the most powerful influence over the production of competent practitioners. Hence podiatrists would be well advised to develop their own monitors of performance and assure quality in the services provided (10). The elements of a quality

assurance programs are:

assessment/assurance/control

It is assessment coupled with action to remediate deficiencies that constitute the assurance of quality. The components of a quality assurance program are:

ASSESSMENT

- Patient Care Evaluation
- Utilization Review
- Continuous Monitors

ACTION

- CME
- Credentialing

Figure 8 shows how these different components are related to the elements of assessment and action. The awarding of hospital-based staff priviledges for podiatrists relate directly to these components in accordance with JCAH standards.

Evalution and Assessment:

It is apparent that the establishment of linkages and application of adult-learning principles is likely to simplify and feed into continuous evaluation of educational enterprizes. The following schem is designed to assist in this conceputalization of a systematic approach to program evaluation.

Conclusion

In conclusion,

1. There are a variety of inter-related mechanisms that need to be employed in order to develop competency based curricula.

2. Academic Rigor including use of educational techniques is necessary IN assuring the public of competent practitioners.

3. An attitude of continuous assessing personal performance as a clinician exemplifies to "life-long" learning and to the eventual continuous readiness to provide competent health care.

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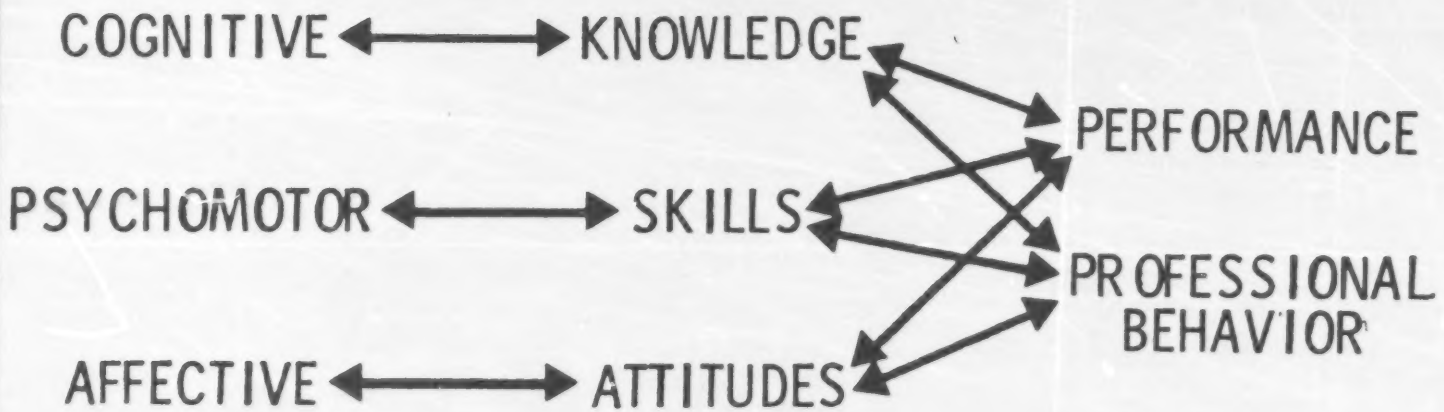
COMPETENCE COMPONENTS



DEFINING COMPETENCE

AREAS

ATTRIBUTES

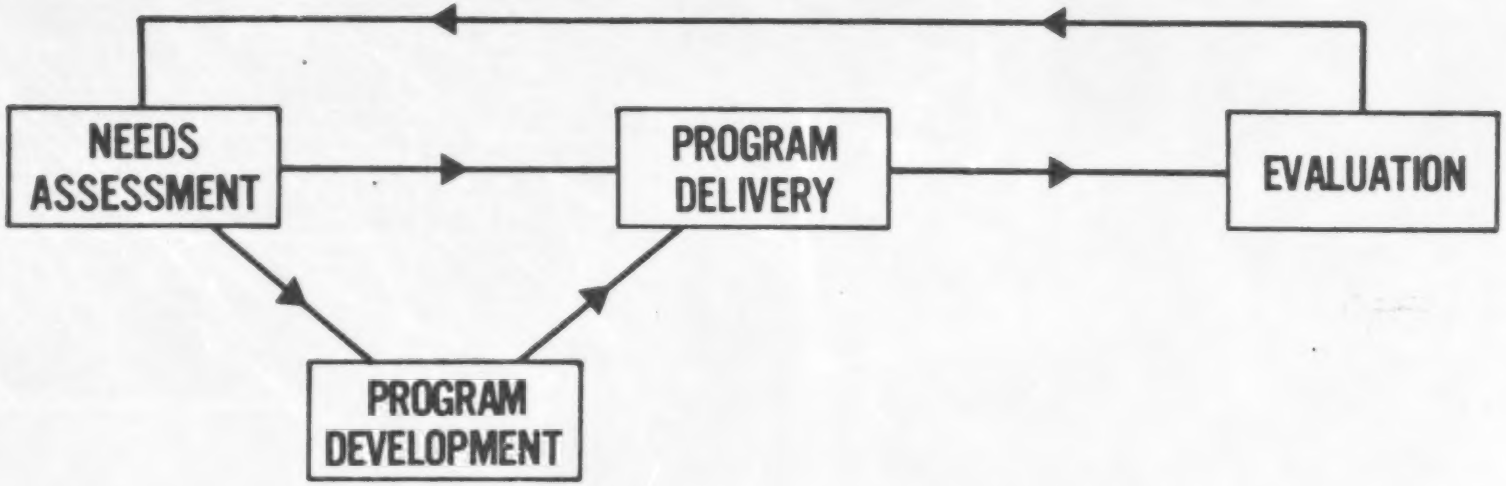
	CLINICIAN (Patient Care)	MANAGER (Administration)	EDUCATOR (Teaching)
KNOWLEDGE			
SKILL			
ATTITUDE			

After Gonella, J. (1977)

CREDENTIALING MECHANISMS

	INSTITUTIONS (Practice Environment)	PROGRAMS (Educational Environment)
ACCREDITATION (Re-accreditation)	JCAH Government (CDC)	LCME (OE/DHEW) LCGME - RRC LCCME
CERTIFICATION (Re-certification)	"of need" HSA's	National "Boards" Commissions
LICENSURE (Re-licensure)	Nursing Homes Long Term Care Facilities	State "Boards"
REGISTRATION (Re-registration)	Administrative Procedure	
CLINICAL (Practice) PRIVILIGES	Hospital Based	

EDUCATIONAL PROCESS SYSTEMS MODELS



A COMPARISON OF ASSUMPTIONS AND PROCESSES OF TEACHER-DIRECTED (PEDAGOGICAL) LEARNING AND SELF-DIRECTED (ANDRAGOGICAL) LEARNING

(Please read as poles on a spectrum, not as black-and-white differences)
by Malcolm S. Knowles Department of Adult and Community College Education, North Carolina State University, January 1977.

ASSUMPTIONS

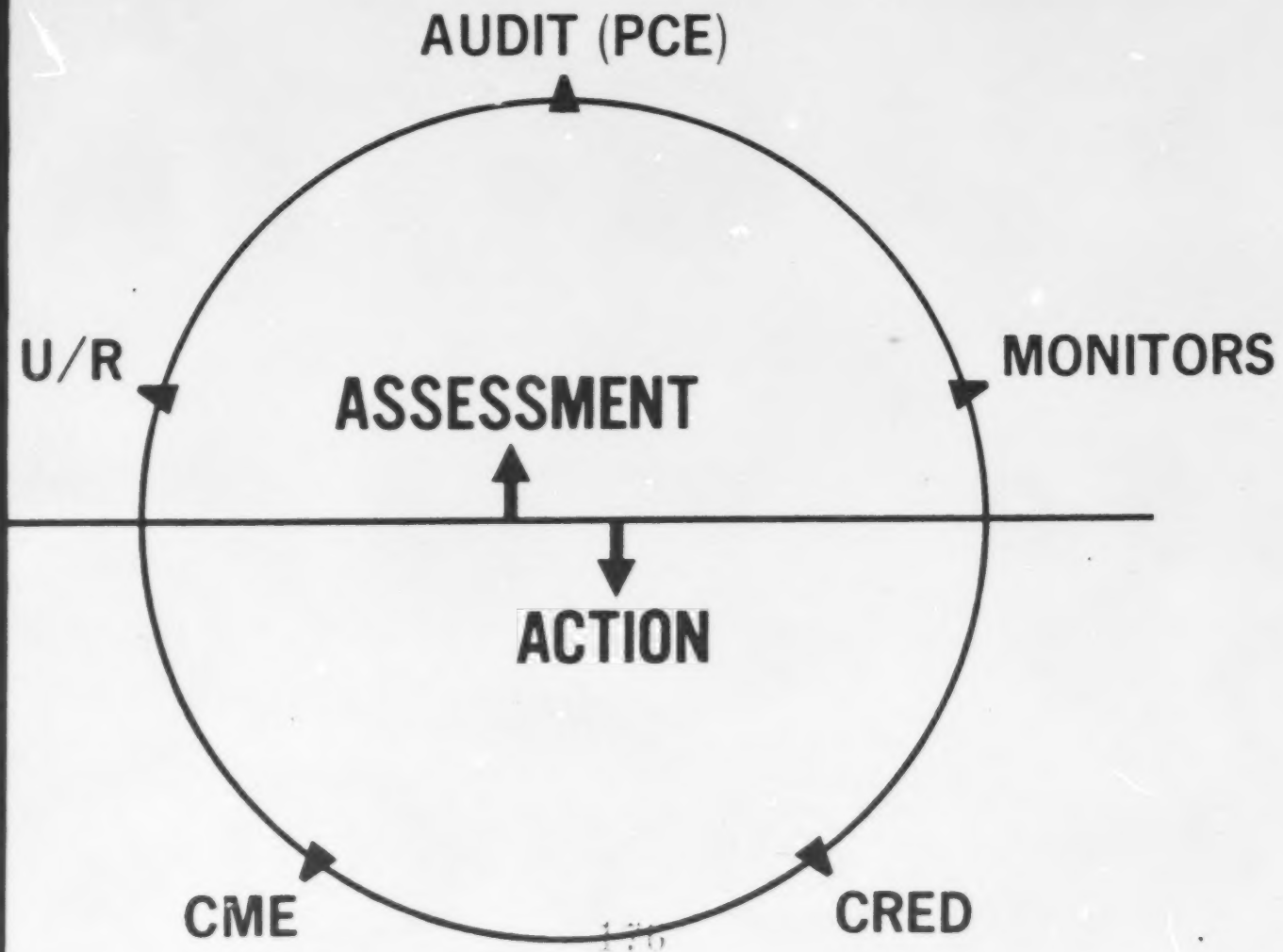
	PEDAGOGICAL	ANDRAGOGICAL
About	Teacher-Directed Learning	Self-Directed Learning
Concept of the Learner	Dependent Personality	Increasingly Self-Directed Organism
Role of Learners' Experience	To be built on more than used	A rich Resource for Learning
Readiness to Learn	Dictated by curriculum	Develops from life Tasks & Problems
Orientation to Learning	Subject-Centered	Task or Problem Centered
Motivation	External Rewards and Punishments	Internal Incentives, Curiosity

PROCESS ELEMENTS

Elements	Teacher-Directed Learning	Self-Directed Learning
Climate	Formal Authority Oriented Competitive Judgement	Informal, mutually respectful, consensual, collaborative, supportive
Planning	Primarily by teacher	By participative Deision-making
Diagnosis of Needs	Primarily by teacher	By Mutual Assessment

Setting Goals	Primarily by teacher	My Mutual Negotiation
Disigning a Learning Plan	Content Units, Course Syllabus, Logical Sequence	Learning Projects, Learning Content Sequenced in Terms of Readiness
Learning Activities	Transmittal Techniques, Assigned Readings	Inquiry Projects Independent Study Experiential Techniques
Evaluation	Primarily by Teacher	By Mutual Assessment of Self-Collected Evidence

CONTENT INTEGRATION



A MODIFIED TASK ANALYSIS OF PRIMARY CARE PODIATRIC MEDICINE

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Thursday, March 22, 1979
Didactic IV

In October of 1978 this article was accepted for publication in the Journal of the American Podiatry Association

A MODIFIED TASK ANALYSIS OF PRIMARY CARE PODIATRIC MEDICINE

According to a survey conducted by the National Center for Health Statistics, there were more than twenty-nine million patient visits made in 1974 by the actively practicing podiatric medical doctors in the United States. More than eighty-four percent of these visits took place in the office and it is reasonable to assume that the overwhelming majority of these patient encounters should be classified under the heading of primary care.[1] This is particularly significant because of the increasing attention and high priority being given to primary care health services.

This has led to a number of questions within podiatric medicine as well as among bureaucrats and elected officials concerning the roles of the various health disciplines in primary care as well as the means of evaluating the quality of the providers of such services. To what extent podiatric medicine and other professions and specialties involved in the care of patients, can label themselves primary care practitioners is still a matter of considerable confusion. Until such time as health manpower labels do have standardized meanings, the question should not be whether this or that is the right label but what does the user mean.

Lewis reminds us that the query among intelligent people who have been exposed to a smattering of analytical discussions about occupations is, what could be so complicated? The layman's normal feeling is that all one needs to do is look at the profession, select out the information one wants and then ask the question, "What is so complex about that?" This is analogous to the layman who wonders what is so complex and costly about brain surgery, "All anybody does is drill a hole in the skull and take out whatever the trouble is."[2] It is not unreasonable to assume that

this reasoning may also be found among health administrators and even providers of medical and surgical care who have had minimal exposure to the practice of podiatric medicine. Obviously, this can and does have an effect on the present and future role of podiatric medicine in the health care industry.

In addition to matters affecting professional roles, one of the major concerns of health policy makers in the nation today is the escalating costs of personal health services. The income of podiatrists has been demonstrated to be among the highest in the health care field, analogous to some specialties in the field of medicine.[3] Weed states that when physicians' economic rewards greatly exceed those of others in the system, they should receive these rewards only for tasks that are unique, necessary and expensive - not through some rites of passage that are either out of date or ill conceived in the first place. No system should start out with the serious financial constraint of large salaries for the M.D. unless a careful analysis of his work can justify them.[4]

Therefore, we find ourself in a period where there are significant modifications in the national policy on health (e.g. the emphasis on primary care) and expected changes in the financing of personal health services. This is combined with the need for guidelines by peer review organizations and concerns about licensure, relicensure, board certification and recertification. To meet these challenges, there is a need for detailed analysis of the practice of podiatric medicine particularly with regard to primary care. Applying the statements of Hess and Levitt to podiatric medicine, it is necessary to define in a comprehensive and precise way the minimum level of competence believed to be essential for the practice of primary care podiatry. In other words, what minimum kind

of knowledge should the primary care practitioner possess; what kinds of disorders should he or she be able to diagnose; what health problems should he or she be able to treat; what types of diagnostic and therapeutic procedures should he or she be able to perform; and what level of skills should be demonstrated in relating to patients, keeping medical records, and so on?[5]

More recently, Robbins stated that the analytical tools now used to describe and enumerate health manpower must be perfected to meet new ends. They must describe what tasks are being done and by whom and how they are combined in the final product - medical care.[6] A potentially valuable tool for helping to solve some of these concerns is the process of task analysis. It has had considerable use among industrial engineers and systems personnel outside of the health care field and until fairly recently was used in the health field for technical and non technical level jobs. More recently, its applicability has been shown for health care professionals at the doctoral level.

Task analyses may be defined as a specific methodology for taking a close look at the elements of a task - the knowledge, skills, ability and purpose involved in that task alone. For example, a task analysis of a physician giving a physical examination would show, item by item, every action he takes: "listens to heart rhythms in patient's chest and back using the stethescope to detect abnormal sounds such as ..." This kind of analysis fills pages as can well be imagined as well as providing excellent material for developing training.[7]

As stated by Andrews, task analysis is a process whereby the activities that physicians engage in and the context in which they engage in these activities, are documented and described in such a way as to make explicit

the purposes of the activity, the procedures that the physician utilizes in performing the activity and the outcomes or expected productivity of the activity.[8]

Task lists, on the other hand, are simply "laundry lists" of what a worker does as the workday wears on, "Talks to patients," "Gives injections," are examples of task lists. Generally speaking, task lists omit mention of specific knowledges required for each task and omit the precise kind of action involved. Both of these aspects are usually assumed to be general knowledge within one department or one practitioner's office or even within the profession, and often they are general knowledge. Only when educators begin to pour over these lists and ask many questions, do the people in the field realize that the lists are not self evident afterall. This is usually followed by the dismaying development that persons in the field and often in the occupation being studied cannot agree on the kinds of knowledge required in each specific task.[9]

Andrew describes three major approaches to task analysis which have already been used by some of the specialty boards. The first involves the consensus of a group of experts who are asked to generate lists of activities de novo and/or by using existing documents. The American Board of Pediatrics has recently completed a task analysis in which they used a group consensus approach describing competency in the field of pediatrics.[10] A second involves the identification of critical incidence of performance which attempts to select those salient activities that appear to have either a positive or negative effect on the quality of care delivered by physicians. It requires the use of qualified observers, generally physicians, who maintain a record of their observations of physician performance. The American Board of Orthopaedic Surgery has

used the critical incidence approach in attempting to define competency within their specialty. A third approach is the use of activity logs and diaries which require a physician to maintain a detailed record of activities performed on a daily basis, their frequency and the amount of time spent on each of these procedures as well as the medical problem situations within which they are performed. This approach has been very actively utilized for the past few years with several medical specialties at the University of Southern California.[11]

Method

The legislature of the State of Texas has instituted an enabling act for the establishment of a school of podiatric medicine preferably within a health science center of the University of Texas System.[12] In considering the possibility of providing this podiatric medical education and training, a feasibility study was conducted between 1976 and 1978. In one of the discussions concerning the feasibility study, the President of the University of Texas Health Science Center at Houston requested that an examination of the tasks required to provide foot care be performed. It was directed that this should include a determination of what types of practitioners are most appropriate to provide the various components of that care (e.g. M.D. specialist, D.P.M., M.D. generalist, B.S. level technician, less than B.S. level technician). The activities intrinsic to a task analysis were performed but the examination of the types of practitioners deemed most appropriate to perform the various tasks involved in foot care has been abandoned at least temporarily.

This paper attempts to record not only the activities included in the practice of primary care podiatric medicine, but the specific level of knowledge or skill required to perform each task. Therefore, it is

not simply a laundry list of tasks, a job description or a record of the responsibility of the primary care podiatrist. With the knowledge and skill aspects of the task clearly defined, however, one begins to see the role of the primary care podiatrist.

The approach used to derive the information was developed from lists of activities generated from existing documents derived from a broad representation of the profession.[13,14,15,16] This was followed with a review by a group of podiatrists with a high level of peer recognition. These individuals are from various parts of the country and are identified with several aspects of podiatric medical activity (e.g. private practice, academic practice, combination of both private and academic practice). In addition, individuals in the University of Texas Schools of Medicine and Public Health at Houston also provided input because of their experiences in the techniques of task analyses and medical education. As previously stated, the American Board of Pediatrics recently completed a task analysis in which they used a group consensus approach.

It must be emphasized that the task analysis performed was not designed to encompass the entire spectrum of podiatric medicine but rather that which could be included within the context of the definition of primary care. While the majority of the tasks included are clearly ambulatory in nature, a number are frequently provided in an in-hospital setting. There is nothing incongruous about this. As stated by Alpert, "The primary care physician holds the contract for providing personal health services over a period of time. Specifically, primary care is neither limited to the course of a single episode of illness nor confined to the ambulatory setting." Some would suggest that primary care ought to end when the patient is hospitalized and that ambulatory care could

then be said to equal primary care. Many problems that require secondary services are largely treated on an ambulatory basis, however, with only occasional hospitalization. Alpert further points out that there is strong support for the view that the physician who practices ambulatory and hospital medicine is a better physician than one who practices only ambulatory medicine. For these reasons, the site of care alone, whether hospital, home or office, is an insufficient basis for a definition of primary care.[17]

It is not implied that all providers of primary podiatric medical care perform all of these tasks nor is it implied that all of the tasks that may fall into the category of primary podiatric care are included in the analysis. Every attempt was made to include as many tasks as possible so that the information will be useful to the profession and the many organizations and agencies that might find this analysis to be relevant. Furthermore, while many of the tasks are performed routinely or frequently, a considerable number of them are performed occasionally and a few even rarely in some primary care settings. While this may be accounted for in some types of task analyses, this paper makes no attempt to consider these variations in frequency.

It will be noted that the tasks are described in behavioral terms. That is, they are described as observable and for the most part, measurable performances so that individuals or groups attempting to determine the role or quality of podiatric medical services, or who are involved in developing podiatric medical curriculum, will not be faced with confusing, abstract or hypothetical statements. Therefore, the methods used by Mager in helping convert general goals to specific useful objectives has been applied in developing this task analysis.[18] As Mager

states, "If you are not sure where you are going, you are liable to end up someplace else - and not even know it."[19]

Results of Task Analysis

The task analysis that was developed is organized in four sections. These are history, examination (physical and laboratory), management and patient advice and counseling.

SECTION I: HISTORY

1-1-1 Grossly observe patient as he or she appears in consultation or treatment room (e.g. appearance, manner).

1-1-2 Obtain patient vital statistics (name, age, weight, etc.).

1-1-3 Obtain statement of chief complaint referrable to the foot.

1-1-4 Obtain history of chief complaint affecting the foot.

1-1-5 Obtain history of other illnesses or injuries patient now has or has had.

1-1-6 Obtain history of drugs patient may be taking, prescribed or otherwise.

1-1-7 Obtain family medical history.

1-1-8 Obtain history of systems.

1-1-9 Interpret medical and surgical history as obtained.

1-1-10 Obtain names of other doctors now being seen and their specialties.

1-1-11 Assist patient in getting on examining-treatment table.

1-1-12 Set up tray with examination and/or treatment instruments.

SECTION II: EXAMINATION

Vascular

2-1-13 Observe color and texture of skin on lower extremity and interpret the significance of these findings.

2-1-14 Observe color of skin of feet and legs on elevation and dependency.

2-1-15 Observe whether and to what degree atrophy is present in either or both limbs and interpret this finding.

2-1-16 Observe if swelling is present in either or both limbs and its nature as well as its significance.

2-1-17 Observe distribution of hair on the legs or feet and its significance.

2-1-18 Observe nature of nail growth on feet and its significance.

2-1-19 Determine actual and/or relative skin temperatures in toes, feet and legs and its significance.

2-1-20 Determine venous filling time and state of capillary return in the feet and its significance.

2-1-21 Determine actual and relevant temperature gradients in skin of feet and legs and its significance.

2-1-22 Palpate arterial pulses in feet, leg (ankle) and popliteal areas and their significance,

2-1-23 Determine the rate and quality of the patient's radial pulses.

2-1-24 Measure the patient's blood pressure.

2-1-25 Perform oscillometry and determine the significance of this test.

2-1-26 Examine the deep and superficial veins of the legs and feet.

2-1-27 Determine whether Homan's sign is present and its significance.

2-1-28 Determine when to order a plethysmographic study and order or perform the study.

2-1-29 Correlate the findings of a plethysmographic study with the total vascular examination.

2-1-30 Interpret a plethysmographic study.

2-1-31 Determine when to order and order or perform Doppler examination of foot and leg.

2-1-32 Interpret a Doppler examination of the foot and leg.

2-1-33 Interpret the total findings of a vascular examination of lower extremities.

2-1-34 Refer a patient to a vascular specialist for diagnostic and therapeutic advice.

Neurological

To screen for evidence of symptoms that would create suspicion of an extrinsic neurological problem rather than an intrinsic foot disorder and to help determine the necessity for a medical neurological consultation, the following tests, examinations or observations are performed:

2-3-35 Examine and interpret Achilles and patella reflexes.

2-3-36 Perform and interpret examination of plantar reflexes and determine the presence of any pathological reflexes (e.g. Babinski, Chaddock, Oppenheim, Gordon).

2-3-37 Perform and interpret examination of vibration and joint position senses to help determine whether neuropathy may be present.

2-3-38 Observe the ability of the patient to differentiate two sharp objects simultaneously placed on the foot or legs and interpret the significance of this test to help determine if neuropathy may be present.

2-3-39 Perform and interpret an examination for sharp-dull sensation in the lower extremity.

2-3-40 Perform and interpret an examination for light-touch sensation in the lower extremity.

2-3-41 Perform and interpret an examination for temperature sensation in the lower extremity.

2-3-42 Inspect and palpate, while at rest, muscles in the lower extremity for size and consistency and interpret this finding (e.g. atrophy of calf).

2-3-43 Differentiate whether atrophy of muscles in the foot or leg are due to disuse as a result of biomechanical problems or due to a neurological disturbance.

2-3-44 Observe the presence or absence of fasciculations and fine tremors in the feet and interpret this finding.

2-3-45 Observe presence or absence of involuntary movements in the lower extremity and interpret this finding.

2-3-46 Examine muscle strength through movement of the toes, feet and legs with and without resistance and interpret this finding.

2-3-47 Determine the presence or absence of deep pressure pain upon squeezing the Achilles tendon and calf and interpret this finding.

Determine whether an entrappment of the following nerves exists in the foot:

2-3-48 Superficial peroneal

2-3-49 Intermediate dorsal cutaneous

2-3-50 Medial dorsal cutaneous

2-3-51 Sural nerve

2-3-52 Posterior tibial

2-3-53 Medial calcaneal

2-3-54 Interdigital nerve (neurolemmoma)

2-3-55 Differentiate peripheral neuroarthropathy of the foot from osteomyelitis and other destructive bony and/or joint lesions.

2-3-56 Interpret the total findings of the neurological examination of the lower extremities.

2-3-57 Refer a patient with suspected neurological deficits manifested in the feet or legs to the internist or neurologist for diagnostic and therapuetic advice.

Biomechanical

2-4-58 Observe and analyze a patient's gait with and without shoes.

2-4-59 Observe the nature of the patient's shoes and hose.

2-4-60 Observe and interpret wearing patterns on a patient's shoes.

2-4-61 Examine the subtalar joint range of motion.

2-4-62 Determine the neutral subtalar joint position.

2-4-63 Examine the mid tarsal joint.

2-4-64 Measure the forefoot varus and valgus to determine relationships to such problems as pronation and first and fifth metatarsal phalangeal area plantar callus.

2-4-65 Examine the first ray range of motion in the foot to help determine if a plantar callus under the first metatarsal phalangeal joint is biomechanical or due to other causes such as arthritis.

2-4-66 Examine motion of the ankle joint.

2-4-67 Examine malleolar torsion.

2-4-68 Examine other musculoskeletal components of the lower extremity to determine if symptoms and signs in the foot are intrinsic or due to disturbances that are located elsewhere.

2-4-69 Examine the lower extremity in static stance position with regard to relaxed calcaneal stance, neutral calcaneal stance and frontal plane tibial positions as well as the presence and number of degrees of knee deformity.

2-4-70 Interpret the total findings of a biomechanical examination of the lower extremities.

2-4-71 Determine whether a patient has a foot dysfunction due to biomechanical abnormality.

2-4-72 Determine whether patient has a foot dysfunction due to causes other than biomechanical but which is being aggravated and/or precipitated for biomechanical reasons.

2-4-73 Determine whether a patient has a foot dysfunction completely exclusive of biomechanical abnormality.

Other Musculo-Skeletal

2-5-74 Differentiate whether an injury to the toes involves the soft tissues and/or joints.

2-5-75 Differentiate whether a fracture, dislocation, subluxation, sprain or strain is the cause of traumatically induced pain to the toes.

2-5-76 Differentiate whether an injury to the metatarsophalangeal joint region involves the soft tissues and/or bones and/or joints.

2-5-77 Differentiate whether a fracture, dislocation, subluxation, sprain or strain is the cause of traumatically induced pain to the metatarsophalangeal joint region.

2-5-78 Differentiate whether an injury to the metatarsal area involves the soft tissues and/or bones and/or joints.

2-5-79 Differentiate whether a fracture, dislocation, subluxation, sprain or strain is the cause of traumatically induced pain to the metatarsal area.

2-5-80 Differentiate whether an injury to the rear foot involves the soft tissues and/or bones and/or joints.

2-5-81 Differentiate whether a fracture, dislocation, subluxation, sprain or strain is the cause of traumatically induced pain to the rear foot.

2-5-82 Differentiate whether an injury to the ankle region involves the soft tissues and/or bones and/or joints.

2-5-83 Differentiate whether a fracture, dislocation, subluxation, sprain or strain is the cause of traumatically induced pain to the ankle area.

2-5-84 Differentiate the possible causes of pain in the soft tissues of the bottom of the foot when no trauma is reported by the patient.

2-5-85 Differentiate the possible causes of pain in the heel or other tarsal areas with no report of trauma by the patient.

2-5-86 Differentiate the possible causes of pain in one or more of the metatarsophalangeal joints or toes with no report of trauma by the patient.

2-5-87 Refer a patient to an orthopedic surgeon or physiatrist for diagnostic evaluation or treatment.

Dermatological

2-6-88 Observe the skin of the foot and leg for the presence and absence of primary and secondary lesions.

2-6-89 Describe lesions with regard to size, shape, content and location on lower extremities.

2-6-90 Observe and determine the cause for pigmentary differences on feet or legs.

2-6-91 Determine the indications for and perform biopsies with the use of a punch and scalpel.

2-6-92 Perform diascopic examination of lesions.

2-6-93 Determine the presence and interpret the significance of Koebner's phenomenon.

2-6-94 Determine the presence and interpret the significance of Nikolsky's sign.

2-6-95 Interpret the total findings of a dermatological examination of the lower extremities.

2-6-96 Determine whether a hyperkeratotic lesion of the foot is due to biomechanical or other reasons (e.g. congenital).

2-6-97 Determine whether a dermatological lesion or lesions of the foot are part of a local or systemic process.

2-6-98 Determine the cause of dystrophic nails of the foot.

2-6-99 Determine whether the cause of ulcers of the foot and/or ankle are due to ischemic, venous, neurological or other reasons.

2-6-100 Refer patient with certain dermatological lesions to a dermatologist for diagnostic evaluation or for treatment.

Palpation

2-7-101 Palpate and attempt to duplicate pain, paresthesia or other sensation in area of patient's chief complaint.

2-7-102 Palpate, describe and attempt to interpret the significance of any masses on the foot.

2-7-103 Determine whether a lesion is attached or unattached to underlying structures.

2-7-104 Determine whether a lesion is or is not well demarcated.

2-7-105 Determine whether an area of swelling is one which is pitting or non-pitting.

Laboratory

To assist in determining whether evidence of extrinsic disease exists, certain laboratory tests may be ordered when appropriate, some of these procedures are performed:

2-8-106 Order and interpret blood counts.

2-8-107 Order and interpret urinalysis.

2-8-108 Order and interpret serological test for syphilis.

2-8-109 Order and interpret sedimentation rate.

2-8-110 Order and interpret blood sugar determinations under fasting and stress conditions.

2-8-111 Order and interpret serum uric acid.

2-8-112 Order and interpret the test for rheumatoid factor and other tests of body fluids relevant to the interpretation of joint symptoms.

2-8-113 Obtain and collect blood specimens for analysis or culture.

2-8-114 Obtain material for and interpret report of a culture-sensitivity test.

2-8-115 Interpret the results of blood and urine analysis for the purpose

of either diagnosing a problem affecting the foot, obtaining a differential diagnosis or assisting in determining the necessity for consultation with another practitioner.

2-8-116 Obtain materials from lesions of the skin, subcutaneous tissues and/or deep structures of the foot for the purpose of analysis and/or culture.

2-8-117 Take scrapings from the skin and/or nails and observe them in a preparation of potassium hydroxide to assist in the determination of the presence or absence of fungal infection.

2-8-118 Take scrapings from the skin or nail of the feet, placing them on culture media, and growing such cultures.

2-8-119 Identify from cultures the common mycotic organisms that grow on the foot and/or send such cultures to the laboratory and interpret the report concerning the growth of bacteria and/or fungus.

2-8-120 Determine the necessity for and order weight bearing and non weight bearing radiological studies of the lower extremity.

2-8-121 Perform weight bearing and non weight bearing x-ray studies with patients positioned appropriately.

2-8-122 Interpret weight bearing and non weight bearing x-ray studies.

2-8-123 Interpret x-ray reports from a radiologist.

2-8-124 Photograph patient's foot disorder.

Communication

2-9-124 Interpret letters, oral referrals and other formal and informal communications from foot specialists and physicians in other specialties.

2-9-125 Interpret the significance of reports received from a pathologist who has examined a biopsy specimen of soft tissue and/or bone.

2-9-126 Prepare letters of referral to other foot specialists and

physicians in other specialties.

2-9-127 Read and understand the significance of examinations performed in hospitals by doctors of medicine on patients with foot problems being treated on an in or out-patient basis.

2-9-128 Dictate the history, examination, treatment, progress notes, hospital or out-patient operative report, discharge note, clinical summary, statements of prognosis, assessment of disability and any other of the usual and customary reports using any dictating device, stenographer or hand written method typically employed.

Diagnostic Conclusions

2-10-129 Determine whether the chief complaint, signs, symptoms or historical findings are of local or systemic origin.

2-10-130 Determine what systemic diseases or class of disease is most likely presenting manifestations in the foot and leg.

2-10-131 Determine to what medical and/or surgical specialist the patient should be referred for consultation tc confirm or investigate further the diagnosis of a systemic disease.

2-10-132 Determine the differential diagnosis of the patient's problem.

2-10-133 Assess each of the diseases or disorders included in the differential diagnosis and determine which of them should be eliminated.

2-10-134 Arrive at a definitive clinical diagnosis.

2-10-135 Upon completion of physical diagnostic procedures and laboratory tests, indicate a definitive diagnosis.

2-10-136 As a prophylactic measure, examine patient with no foot symptoms but with a systemic disorder with a propensity for acquiring foot pathology (e.g. diabetic, elderly, peripheral vascular patient).

2-10-137 Evaluate symptoms of patient complaining of pain, pruritus,

numbness or paresthesia in the foot.

SECTION III: MANAGEMENT

3-1-138 Debride hyperkeratotic lesions of the foot.

3-1-139 Determine appropriate dressing and/or padding to be applied after debridement of traumatically induced hyperkeratosis of the foot.

3-1-140 Determine site to apply dressing and/or padding.

3-1-141 Apply dressing and/or padding.

3-1-142 Remove dressing and/or padding.

3-2-143 Determine the necessity for the construction of a biomechanical device.

3-2-144 Determine the nature of the biomechanical device to be constructed including its size, shape and material.

3-2-145 Place patient and his or her foot and leg in a position appropriate for casting the foot in plaster of paris or other material.

3-2-146 Prepare a plaster of paris model from the mold that was taken.

3-2-147 Correct the resulting cast.

3-2-148 Using the corrected cast, manufacture the biomechanical device.

3-2-149 Place the biomechanical device in the patient's shoe or on his or her foot to determine whether any adjustments have to be made.

3-2-150 Adjust areas of the orthotic device that are causing pain.

3-2-151 Make necessary adjustments of the biomechanical device.

Determine the indications for and produce an impression cast in the following manner:

3-2-152 Neutral plantar

3-2-153 Neutral non weight bearing

3-2-154 Supinated non weight bearing

3-2-155 Pronated

3-2-156 Full weight bearing

3-2-157 Shoe cast

3-2-158 First metatarsophalangeal joint shield

3-2-159 Fifth metatarsophalangeal joint shield

3-2-160 Lesser toe shield

3-2-161 Mobilize or partially immobilize the joint motions in the foot and leg by use of certain splints attached to the shoe (e.g. Brachman splint, Ganley splint, etc.).

Determine the indications for and prescribe or produce the following corrections or devices:

3-2-162 Rear and/or forefoot posts

3-2-163 Wedging of shoes

3-2-164 Shoe lifts

3-2-165 Removable impression insoles and modifications

3-2-166 Protective devices for alleviating or dispersing pressure on certain deformities or skin lesions such as ulcers, corns, calluses, digital amputation stumps (e.g. latex shields)

3-2-167 Determine what strap and/or pad should be applied to the foot and leg for the care of traumatic and non-traumatic conditions.

3-2-168 Apply strap and/or pad to the foot and/or leg for the care of traumatic or non-traumatic conditions.

3-3-169 Evaluate whether a local anesthetic should be given.

3-3-170 Evaluate whether injecting a local area of the foot or ankle may be hazardous to the viability of that area or parts contiguous or adjacent to it.

3-3-171 Determine the best site where an anesthetic injection should be given to block all or parts of the foot.

3-3-172 Prepare digit or other parts of the foot and ankle for anesthesia by applying suitable antiseptic.

3-3-173 Determine appropriate form of local anesthetic.

3-3-174 Select appropriate syringe and needle size.

3-3-175 Fill syringe with anesthetic agent.

3-3-176 Inject appropriate volume of anesthetic in area which will create anesthesia in appropriate part(s) of digit, dorsum and/or plantar.

3-4-177 Identify signs and symptoms of acute and delayed adverse reactions to a local anesthetic or other drug administered.

3-4-178 Know the indications for and perform cardiopulmonary resuscitation (CPR) on a child and adult.

3-4-179 Know what drugs should be administered in an anesthetic or other drug acute or delayed reaction and administer them through the appropriate route.

3-4-180 Know the indications for and be able to create an airway and appropriately administer oxygen in an emergency situation.

3-4-181 Train technical and/or non-technical personnel in office to react appropriately in an emergency situation and be able to perform CPR.

3-5-182 Prepare and maintain a surgically sterile field in office and hospital environments.

3-5-183 Make hospital rounds.

3-5-184 Determine the indications for and apply a tourniquet to the leg, foot or toe.

3-6-185 Apply flexible cast to foot and/or ankle area (e.g. Unna boot).

3-6-186 Determine the indications for and apply plaster of paris for immobilization of the foot and leg for the treatment of trauma or post surgically.

3-6-187 Select the appropriate suture material for the repair of tendons, subcutaneous tissues and skin.

3-6-188 Determine the appropriate method of suturing and suture tendons, subcutaneous tissues and skin.

3-6-189 Determine whether a patient is an appropriate candidate for a surgical procedure of the foot.

3-6-190 Determine the appropriate surgical procedure for the correction of a foot disorder.

3-7-191 Surgically correct a hammer toe or mallet toe.

3-7-192 Surgically correct an overlapping toe.

3-7-193 Remove a subungual exostosis.

3-7-194 Remove one of the sesamoids under the 1st metatarsophalangeal joints.

3-7-195 Surgically correct an enlarged 1st metatarsophalangeal joint.

3-7-196 Surgically correct a hallux valgus (bunion) deformity not requiring a joint implant.

3-7-197 Surgically correct a 5th metatarsophalangeal joint (Tailor's Bunion) deformity.

3-7-198 Surgically correct deformities of the 2nd, 3rd and/or 4th metatarsophalangeal joints.

3-7-199 Remove a symptomatic accessory navicular bone.

3-7-200 Resect an exostosis of the posterior heel (Haglund's Deformity).

3-7-201 Resect an interdigital neuroma (neurolemmoma).

3-8-202 Treat a fracture and/or dislocation of the lesser toes (2,3,4,5).

3-8-203 Treat a simple fracture and/or dislocation of the great toe.

3-8-204 Treat a sprain of the 1st metatarsophalangeal joint.

3-8-205 Treat a fracture and/or dislocation about a metatarsophalangeal joint.

3-8-206 Treat a stress or march fracture.

3-8-207 Treat other simple fractures of the metatarsals not involving the tarsal bones.

3-8-208 Using closed reduction, treat a compound fracture of the metatarsals not involving the tarsal bones.

3-8-209 Treat a simple fracture without displacement of the tarsal bones.

3-8-210 Treat a fracture of the tarsus with displacement non surgically.

3-8-211 Treat a chronic weak ankle or chronic ankle sprain with supportive methods.

3-8-212 Treat a simple ankle sprain.

3-8-213 Treat a moderate or severe ankle sprain conservatively.

3-8-214 Prior to establishing a definitive diagnosis, demonstrate appropriate first aid care of a bone and/or joint injury to the foot or ankle.

3-9-215 Determine the indications for and perform an intra- or periarticular injection.

3-9-216 Determine the indications for and perform an aspiration of joint fluid.

3-9-217 Inject a therapeutic agent intralesionally.

3-10-218 Determine the indications for and debride an ulcer or traumatically and non-traumatically caused wounds.

3-10-219 Debride a normal nail.

3-10-220 Debride a dystrophic nail.

3-10-221 Burr a dystrophic nail.

3-10-222 Currette a nail groove.

3-10-223 Pack a nail groove.

3-10-224 Remove an infected or non-infected portion of an ingrowing nail.

3-10-225 Determine when to avulse a nail plate and perform the procedure.

3-10-226 Determine when the matrix of a nail should be destroyed or resected.

3-10-227 Resect the matrix of a nail governing the growth of one side.

3-10-228 Resect the total matrix of a nail.

3-10-229 Destroy chemically the matrix of a nail governing the growth of one side by phenolization.

3-10-230 Destroy chemically the total matrix of a nail by phenolization.

3-10-231 Physically or chemically destroy verrucous tissue on the foot.

3-10-232 Destroy or remove a lesion from the foot using electrosurgery.

3-10-233 Incise and drain an abscess, onychia or paronychia.

3-10-234 Puncture and aspirate a hematoma or large bulla.

3-10-235 Remove a foreign body from the foot.

3-10-236 Excise a skin lesion.

3-10-237 Excise a subcutaneous lesion.

3-10-238 Conservatively treat a draining sinus in the digital or metatarsal phalangeal area or under a traumatic hyperkeratosis (e.g. corn, callus).

3-10-239 Remove a cystic lesion.

3-11-240 Evaluate the type of post operative care necessary to maintain the foot in a corrected position.

3-11-241 Evaluate the healing process including the presence or absence of infection and swelling.

3-11-242 Treat infection, dehiscence or other complication of the surgical site.

3-11-243 Determine the indications for and perform an aspiration of the contents of a cystic lesion or structure such as a ganglion or bursa.

3-11-244 Determine the indications for and inject therapeutic material into a cystic lesion or structure such as ganglion or bursa.

Determine the indications for:

3-12-245	Hot or cold packs	3-12-248	Paraffin bath
3-12-246	Mechanical traction	3-12-249	Microwave therapy
3-12-247	Electrical stimulation		

Determine the indications for:

3-12-250	Whirlpool	3-12-254	Ultrasound
3-12-251	Diathermy	3-12-255	Contrast bath
3-12-252	Infrared	3-12-256	Therapeutic exercises
3-12-253	Ultraviolet	3-12-257	Massage

Administer the following types of therapy:

3-12-258	Hot or cold packs	3-12-265	Infrared
3-12-259	Mechanical traction	3-12-266	Ultraviolet
3-12-260	Electrical stimulation	3-12-267	Ultrasound
3-12-261	Paraffin bath	3-12-268	Contrast bath
3-12-262	Microwave therapy	3-12-269	Therapeutic exercises
3-12-263	Whirlpool	3-12-270	Massage
3-12-264	Diathermy		

3-13-271 Evaluate the patient's progress and response to treatment.

3-13-272 Develop a treatment plan for the care of a patient's foot problem.

Medication

3-13-273 Prescribe oral and/or parenteral analgesics, sedatives or tranquilizers to relieve pain and anxiety due to foot pathology, injury or surgical treatment.

3-13-274 Determine whether other drugs patient may be taking, prescribed or non-prescribed, will react adversely with the medication to be employed for the foot disorder.

3-13-275 Determine the possible side effects of therapy being used and advise patient about this possibility including signs, symptoms and precautions.

3-13-276 Determine whether the drug to be prescribed for the foot problem will react adversely with systemic disorders which may be present.

3-13-277 Determine the indications for and prescribe appropriate antibiotics for topical, oral and/or parenteral administration.

3-13-278 Determine the indications for and prescribe appropriate corticosteroids for topical, oral and/or parenteral use.

3-13-279 Determine the indications for and apply or prescribe a topical proteolytic enzyme, keratolytic or emollient.

3-13-280 Determine the indications for and prescribe peripheral vasodilating agents.

3-13-281 Determine the indications for and prescribe certain vitamins.

SECTION IV: PATIENT ADVICE AND COUNSELING

4-1-282 Answer a patient's questions concerning prescription and non-prescription drugs.

4-1-283 Answer patient's questions about signs, symptoms, diseases and treatment.

4-1-284 Explain operative procedure to patient or family.

4-1-285 Explain to patient or family the necessity of performing certain tests and procedures prior to or during examination and treatment.

4-1-286 Inform patient where to obtain certain medical supplies and devices.

4-1-287 Reassure patient prior to surgical and non-surgical care.

4-1-288 Prepare and explain instructions for patient concerning examination, treatment and prophylaxis.

4-1-289 Give patient or family supplementary health education materials.

4-1-290 Teach patient and family foot health promotion practices.

4-1-291 Teach patient and family care of specific diseases affecting the foot (e.g. diabetes, CVA, arthritis).

4-1-292 Explain to patient need for referral to another foot specialist or other physician.

4-1-293 Instruct patient on performing certain exercises and their importance.

4-1-294 Talk to lay groups on foot health care.

4-1-295 Counsel and instruct patient in treatment regimen for a problem.

4-1-296 Advise patient the frequency of the number of visits required for care.

4-1-297 Advise patient when they are discharged.

Summary and Conclusions

An analysis of the tasks involved in primary care podiatric medical practice has been described. Written in behavioral terms, the analysis may be more universally useful because of its potential applicability to interpreting the role of the profession in primary health care. It can also be used in evaluating the quality and complexity of podiatric services as well as the potential for providing guidelines to podiatric medical educational institutions and programs attempting to respond to social needs. It is felt that a more detailed task analysis describing all aspects of podiatric medical services rather than limited to primary care would be a useful project for the profession. In addition, these studies should be supplemented by a determination of which of the tasks may be provided by lesser trained personnel (e.g. technicians) as well as a survey of the tasks shared by podiatric medicine and other doctoral level health professions.

It should be appreciated that this task analysis does not include all the activities involved in the performance of primary care podiatric medicine. Rapidly evolving concepts and techniques in all fields of medical care, by necessity, demand constant modifications of descriptions of the tasks required to practice any health field especially at the doctoral, independent practitioner level.

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DEVELOPING A COMPETENCY-BASED MODEL AND ITS IMPLICATIONS FOR PODIATRIC MEDICAL EDUCATION

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Thursday, March 22, 1979
Didactic IV

Faculty Workshop on
Clinical Instruction in Podiatric Medicine

What is competency-based education? Torshen (1977) in her book The Mastery Approach to Competency-Based Education states:

> Competency based education is an approach to instruction that aims to teach each student the basic knowledge, skills, attitudes and values essential to competence. This approach begins by identifying the outcomes most important for students to attain. Then instructional programs appropriate for helping each student acquire the learning most relevant for him are designed. Each student in a class can learn from the same instruction, or varied types of instruction can be employed, depending upon the needs and preferences of the students and resources available. Performance is evaluated by measuring whether the student reached each of the outcomes defined as essential for him (pp. 17-18).

An important premise which is basic to the competency-based approach to education is the belief that every student can master the objectives of a program, if he or she has access to appropriate instruction and adequate time to learn.

A mastery model has been developed to structure curricula to maximize the likelihood that each student will reach the performance levels essential for competence. The model contains six components: objectives, preassessment, instruction, diagnostic assessment, prescription, and postassessment (Torshen, 1977).

Objectives, the first component of a mastery model, are specific statements of outcomes which students in an instructional program are expected to attain. The format of objectives has received considerable attention in the professional literature. The issue revolving around format focuses on whether objectives should be stated in behavioral terms (Mager, 1962) or in general terms (Tyler, 1950). An objective

expressed in behavioral terms describes the performance required so that it can be measured, specifies the conditions under which the performance will be observed, and the criteria for success or competency. For example, a behavioral objective might be:

> The student will be able to triage patients, into emergent, acute minor illness, or well person dispositions with 90 per cent of triage decisions resulting in correct disposition (Simon, 1976, p. 9).

This same objective could be expressed in general terms:

> The student will learn how to triage patients.

This author believes that for purposes of evaluation it is necessary to use the behavioral format with the following proviso: avoid strict adherence to writing behavioral objectives in a rigid style without adapting that style to the content of the curriculum, e.g., non-clinical or clinical, the type of objectives, i.e., knowledge, attitudes, or skills and the level of specificity and detail needed to create meaningful statements which can be used to improve the quality of instruction and evaluation.

Preassessment, the second component of the model, is the evaluation of student competence in order to determine whether the student has the necessary prerequisites to enter a new instructional sequence. Pretests are generally given to determine to what extent the student possesses the relevant knowledge and skills specific to the instructional program. There is reason to believe that IQ tests and other measures of general ability are not as effective pre-assessment measures as the more specific pretests.

Instruction, the third component of the model, should be planned to help the student master the objectives. The type of instructional approach per se does not appear to be highly significant because the findings from the research studies have not consistently shown that one type of instructional approach is more effective and efficient than another. In designing a course or series of courses, one should focus on the sequencing of objectives and instructional activities, and the content of the instructional program. Varied instructional approaches should be used in order to stimulate and maintain the student's interest in learning and in the curriculum.

The sequencing structure proposed in the Taxonomy of Educational Objectives: Handbook I Cognitive Domain (Bloom, et al, 1956) has probably been the approach most frequently incorporated into curriculum design. The Taxonomy is a hierarchical arrangement of educational objectives in which the lower-order objectives, those dealing with factual information, are supposed to be taught first and the higher-order objectives, those dealing with problem-solving and evaluation strategies are supposed to be taught later in the instructional sequence.

The work of Gagné (1962) led to the development of another approach to sequencing learning which he called a "hierarchy of knowledge". Gagné identified the highest skill that he wanted to teach in a specific content area and asked the question: What must a learner be able to do in order to perform this task successfully? He continued asking this question until he had identified those prerequisite skills which were necessary to perform a particular task successfully. One would continue identifying prerequisite skills until the student reached the basic skills which he or she had already mastered.

More general questions about sequencing are based upon assumptions which need to be investigated. For example, at the University of Illinois College of Medicine, it was assumed that the medical students should learn pediatrics before progressing to adult medicine. Questioning this assumption, the University of Illinois College of Medicine conducted a study to determine whether teaching pediatrics early in the clerkships affected efficiency in learning. The results indicated that the sequencing of specialties did not affect efficiency in learning, provided that the students had completed a year of basic medical instruction (Torshen, 1977).

Another assumption that needs to be questioned is the relationship between content and intellectual abilities. For example, it has been assumed by some that problem solving ability is an intellectual skill which is not highly dependent on specific content. McGuire and Page (1972-1973) in their study of the clinical problem solving behavior of physicians found that those who were efficient in solving some types of problems were often inefficient in solving other types of problems. If one accepts that problem-solving skills are dependent on the possession of specialized knowledge, then medical schools should structure the curriculum to focus on student mastery of specific diagnostic problems.

The results of the McGuire and Page study should not be surprising. In fact, the results are consistent with the hierarchical structure posed in Bloom's Taxonomy and Gagné's "hierarchy of knowledge". That is, the performance of higher order tasks is dependent upon one's ability to perform lower order tasks.

Diagnostic Assessment, also classified as formative evaluation, which is the fourth component of the mastery model, provides information on the student's progress toward mastering the instructional objectives. In order to decide whether the student has mastered an objective or a set of objectives, performance standards must be established. The determination of mastery based on attainment of performance standards is referred to as criterion-referenced measurement. In contrast, normative-referenced measurement, which is more commonly used than criterion-referenced measurement, focuses on comparing a student's performance to some reference group of people, the "norm". Realistically speaking, both criterion-referenced measurement and normative referenced measurement should be used in the evaluation of student performance. Most importantly, we want to know whether a student has performed to meet a set of standards, but we also want to know whether those standards are realistic. Normative data provides information to determine the latter.

In establishing the minimum pass level or the acceptable level of student performance, several judges should participate in establishing these standards and develop a consensus standard for each unit in an instructional program. There is reason to believe that a single standard for an entire instructional program is not as effective an aid to mastery as individual standards.

The establishment of excessively high standards is a common problem in the implementation of mastery models. Frequently, those who set the standards are not discriminating between important questions and

unimportant questions. In medicine, for example, one could identify specific life-saving techniques which every medical student should master. In this instance, the requirement that each medical student should master the life-saving techniques, at what appears to be an excessively high level of 100%, could be justified. In many instances, however, the so-called minimal passing levels are set unnecessarily high. Consequently, students who perform below the required standard on a diagnostic test may not be allowed, unjustifiably, to proceed to the next unit of instruction.

One could question the appropriateness and the necessity of mandatory diagnostic testing in higher education. It is interesting to note that the University of Illinois, in the early stages of implementing the mastery model, provided their medical students with diagnostic tests as an optional instructional aid. They found that the diagnostic tests had no measured impact on student learning. The opposite was true, however, when the diagnostic tests were mandatory and the passing levels were enforced.

Prescription, the fifth component of the mastery model, refers to those instructional activities which one could recommend to a student based on the diagnostic assessment. Depending upon the level of performance, one could prescribe remediation, relocation, or enrichment.

Postassessment, also classified as summative evaluation, which is the final component of the mastery model measures whether each student has achieved the outcomes as stated in the objectives.

Implications for Podiatric Medical Education

The application of a competency-based model to podiatric medical education, although appealing, has a basic problem which should be resolved prior to implementation. That is, the model is designed to allow a student to have adequate time to learn. Adequate time needs to be defined or the student will define it as unlimited time. Moreover, it is not clear what one can do with a student who cannot, for example, master a significant clinical objective requiring the synthesis of information in order to make a diagnosis.

Implicit in competency-based education is a commitment to structuring the instructional program so that the student will succeed. What can we do when our efforts fail? We can't fail because of our commitment to the student. We can, however, develop appropriate screening techniques to select and admit those students to podiatric medical schools who have the prerequisites to succeed.

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DEVELOPMENT AND USE OF BEHAVIORAL OBJECTIVES

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Didactic IV

DEVELOPMENT AND USE OF BEHAVIORAL OBJECTIVES

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One of the most commonly discussed and misunderstood concepts of education today is the use of objectives in curriculum planning. To make optimal use of objectives, one must understand both what they are and how they fit into the total picture of curriculum development.

Robert Mager defined an objective as "as intent communicated by a statement describing a proposed change in a learner--a statement of what the learner is to be like once he has completed a learning experience."[1] The key to this definition is that the emphasis is placed on the learner, not on the teacher. If an educational program is to be successful, the increased capabilities of the learner are the gauges by which the effectiveness of the teaching can be measured. The quality of the objectives, then, is dependent upon the ability of the curriculum developer to succinctly communicate to the learner what he/she will be able to do upon completion of the course.

The next logical step is to identify and discuss the four components of well-written objectives. A well-written objective is one which facilitates the evaluation process by permitting the teacher to efficiently measure the student's level of achievement. The four components of objectives are as follows:

1. The conditions under which a student will perform are factors that modify or define the situation. Example: Given (specify condition) the student will...

2. The behavior a student will exhibit is the way in which a student acts or functions. Example: Given (specify condition) the student will (specify behavioral verb). A list of some explicit behaviors is as follows:
   1. List
   2. Describe
   3. Write
   4. Define
   5. Identify
   6. Compare

   Each of these behaviors represent an activity and is measurable. Inactive behaviors such as
   1. Know
   2. Understand
   3. Believe
   4. Appreciate

   should not be utilized as they are unmeasurable, open to multiple interpretations and therefore inadequate.
3. The content includes the knowledge, skills, or values inferred from the behavior exhibited by the student. Example: Given (specify condition) the student will (specify behavioral verb) (specify content).
4. The standard to which the student will perform should define the acceptable level of learner performance. An example of an objective employing all four components is as follows:

   > Given a patient with an open fracture of the tibia (condition), the student will write (behavior) an initial plan of management (content) which will be in 90% agreement with a plan devised by faculty (standard).

If an individual writes objectives utilizing these four components, his/her objectives will accomplish a number of the roles that objectives should play in the curriculum development process. Objectives can serve as advance organizers in the curriculum development process. Their function in this area would be to insure continuity and direction by serving as a central focus for all areas of the planning process. The objectives would then become the bases for the evaluation, instruction activities, materials and equipment needed to present an educational program in a suitable manner. For example, they should contain all those elements that would permit a faculty member to judge (a) whether the objectives were achieved or not; (b) which methods might be most successful in presenting the content; and (c) which materials might be most appropriate to assist the learners in achieving the objectives.

It is extremely important to emphasize that objectives should be, by necessity, an integral part of the curriculum development and management process. They are not an isolated entity to be written as an intellectual exercise.

Objectives are utilized daily in every business and profession, although they may be called by another name. Three examples of such objectives are as follows:

1. In planning a trip, the mode of transportation selected would be dependent upon availability, distance, time, convenience, cost or any number of variables. The objective could be stated thus: In taking a trip of 145 miles, a person will drive an automobile from Augusta, Georgia, to Atlanta in less than three and one-half hours without ever exceeding the legal speed limit.

2. An architect selects materials and specifies his construction schedule based upon a set of blueprints which are, in effect, his objectives.

3. A physician collecting a data base on a patient would use a thermometer rather than a tape measure to ascertain the patient's temperature.

Once the objectives have been written, there are three critical questions concerning their value that must be considered. First, are the objectives understandable, or clear? Both the learner and the teacher must fully understand exactly what is meant by each of the objectives. If the concept of objectives being a "communication of intent" is accepted, then the notion of clarity is essential to that definition. Objectives must be written in such a fashion that there is very little room for interpretive mistakes.

Second, are the objectives achievable? The objectives for the learner must be within his/her reach. Unless the objectives are at a level that one could realistically expect the learner to achieve, they will be useless for all those purposes for which objectives are intended.

Third, are the objectives appropriate for the learner? The objectives might be both clear and achievable; however, they may be inappropriate for the intended learner and, therefore, worthless. For example, an objective for a podiatrist in a continuing education program might be as follows:

> Given a patient with a toothache in a molar, diagnose and manage the problem utilizing procedures considered acceptable by the American Dental Association in one hundred percent of the class.

This objective contains the four components of objectives and is written in a clear, understandable fashion. The problems with this objective, then, are that it is probably not achievable, and more importantly it is entirely inappropriate for the learner, as it bears no relationship to his/her professional specialty.

If objectives can really help teaching faculty organize and more effectively evaluate programs, what, then are some of the arguments against their use? An obvious debate could be that objectives are difficult to write and take more time than they are worth. A response to the argument might be that learning to drive a car or perfecting certain professional skills is also difficult at

first, but with practice, the proficiency in these activities, as well as in objective writing, will improve. The idea that "nothing should ever be done for the first time" is actually not a valid one. A second objection to the use of objectives is that they are restrictive. Detractors using this argument say that learners will not go beyond the written objectives. Well-motivated learners may go well beyond objectives. However, objectives that specify an acceptable level of performance should be sufficiently inclusive for that particular learning experience. Other detractors state that objectives are merely a means of "spoon feeding" the learners. If "spoon feeding" can be defined as communicating with the learners the expectations of course, lecture, or program, then it is certainly compatible with the generally accepted principles of learning. A final negative comment on objectives form some faculty is that "they just don't work." If objectives are able to satisfactorily respond to the questions of clarity, achievability and appropriateness, then this argument is invalid. It is only when objectives are used inappropriately that they become either useless or harmful. One ordinarily would not cast a compound fracture of the tibia with a couple of rubber bands, but that does not mean that the concept of casting is unsound. With the appropriate materials and techniques, casting most likely would be one of the treatments of choice. Objectives can, in the same vein, be considered a treatment of choice for educational programs, provided that suitable techniques are utilized.

In summary, objectives are a planning, developmental, and evaluative effort to communicate to the learner the expectations of the faculty for learner performance. Well-written objectives should contain four components--conditions, behavior, content, and standards. Objectives may be stated in a number of ways; nowever, they should always contain those four components in some manner. In order to evaluate the effectiveness of the objectives, clarity, achievability, and appropriateness must be seriously considered. Well-written objectives should serve as the cornerstone for any type of educational program.

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PREPARING FACULTY TO PROVIDE EFFECTIVE CLINICAL DEMONSTRATIONS

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THURSDAY, MARCH 22, 1979

DIDACTIC V
WORKSHOP A

PREPARING FACULTY TO PROVIDE EFFECTIVE CLINICAL DEMONSTRATIONS*

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INTRODUCTION

Because of the nature of the disciplines and what is to be learned in health care fields, the demonstration is one of the most widely used and viable teaching techniques. In its most simple terms, a demonstration is a carefully planned presentation in which learners are shown how to perform a skill or technique that they are expected to master. The unique situation developed by the demonstration teaching technique places special emphasis upon the instructor. For this reason it is important to discuss specific aspects of the teaching process in conjunction with the demonstration teaching technique. These are: teacher tactics and verbal and nonverbal behaviors. When the instructor is cognizant of the effects of particular tactics and behaviors and can utilize them to best benefit, the demonstration becomes a very efficacious teaching technique.

PLANNING THE DEMONSTRATION LESSON

A demonstration is most effective if it is smooth, efficiently performed, and precise in every detail. There are a few basic points to be considered in planning for a demonstration.

It is best to develop a lesson plan; lesson plans serve to eliminate loss of time and ensure that all necessary steps have been included. Lesson plans help the instructor concentrate on the specific purpose and the educational objectives for the demonstration. Often it is helpful to prepare a task analysis as a preparatory step in developing the lesson plan. A task analysis forces the instructor to focus on all essential and important aspects of the skill which is to be demonstrated. Too often the tendency of an experienced person is to overlook details which have become second nature; however, the learner must be "keyed in" to these in order to perform the skill efficiently and effectively. Secondly, by developing a task analysis, one is able to identify key points that should be discussed with each step of the skill.

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*This paper is adapted from and closely parallels workshop materials developed through the Teaching Improvement Project by the Center for Learning Resources, at the University of Kentucky.

If tools or equipment are to be a part of the demonstration, they should be located and arranged prior to the demonstration. They should be tested to make sure that they are working properly. If during the demonstration, the equipment must be moved, arrange it so that movements can be carried out quickly and quietly. Any unnecessary distractions tend to impede learner concentration.

Thought should be given to the best arrangement of all physical facilities. Students, equipment, and especially the instructor should be positioned so that each student can easily see what the instructor is doing and can hear clearly what is being said.

Additional consideration should be given to potential variations. For example, assistants may be helpful in order to facilitate the demonstration. If so, they should be briefed beforehand so that they know what is expected of them. In particular if a patient is to be involved in the demonstration, explain to him what his role will be, and what you will be doing. Provide for his comfort and make sure that he will be treated with respect—not simply as a prop.

Mirrors can effectively be used to give students a better look at all aspects of the demonstration. Television can also be used for the same purpose. Two possibilities exist. The demonstration may be videotaped and shown simultaneously on several televisions located throughout the audience. Or, using closed-circuit television, the demonstration may be better shown to the audience as it is performed by the instructor.

Finally, in preparation for the demonstration, it is often useful to have handouts prepared for learner use during the demonstration and for reference afterwards. It is extremely difficult for students to watch what is being demonstrated and at the same time to take notes or, if appropriate, to make sketches of important elements of the skill.

CONDUCTING THE DEMONSTRATION

Instructional Set

The first few minutes of any teaching activity are usually spent introducing the lesson. A common term to describe this activity is instructional set. The instructional set is a deliberate effort on the part of the instructor to prepare the learners for what is to follow. If a demonstration is to follow, several basic points are included in the instructional set:

1. The content is introduced.
2. Mood, climate, and tone are established.
3. Students are motivated to participate; their interest is aroused.
4. The utility of the skill to be demonstrated is related to present or future professional activities.

5. A common base of knowledge is established by relating the lesson to previous or future knowledge.

6. The objective(s) of the demonstration are clearly stated so that each knows what is expected of him following the demonstration lesson.[1]

The establishment of the instructional set is important to the success of the lesson. It is the time when the instructor focuses the learners' attention on the activity at hand. In a sense, the world is shut out. Just as important, the instructional set provides learners with a relevant reason for participating. They are told what is going to happen, why, and how it will affect them.

The Demonstration

The actual demonstration follows the establishment of instructional set. There are eight basic points to keep in mind in conducting the demonstration. First, if there are general safety and health precautions, rules, or regulations associated with the skill, these should be stated initially and then repeated, as appropriate, during the progress of the demonstration. Second, before a new step is initiated, explain precisely what will be happening and why. Third, check frequently to be sure that each learner is understanding the demonstration. Ask questions, or possibly ask a member of the group to paraphrase what was just said. It is best to do this at the conclusion of a step so that the questions or comments are not disruptive to the explanation of the particular step.

Fourth, pace explanations so that they match the performance of each step of the demonstration. Long pauses can be awkward gaps and points at which learner interest and attention can be lost. Fifth, maintain contact with the group members. Speak to them and not to the equipment; make sure their attention is focused on the demonstration and that they do not miss steps. If necessary, repeat a step if concern develops that some may have missed the point. Sixth, always be conscious of relative position to the students both of yourself and the equipment. Do not cause views to be obstructed.

Seventh, keep the learners posted on the progress of the demonstration. Help them to understand which steps are more difficult; explain beforehand what to look for and be aware of. If a difficult step does not proceed as expected, explain the situation and then repeat the step. Finally, summarize the demonstration hitting on all key points in their proper sequence. Ask questions and answer questions making sure that all has been understood.

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[1] Teacher Improvement Project, "The Demonstration," Center for Learning Resources, Lexington: University of Kentucky, p. 10.

Closure

Closure is to the conclusion of the lesson as instructional set is to the introduction. It provides a crisp and concise ending. Closure should:

1. introduce no new material or ideas;
2. effectively summarize the major ideas and key points that were previously made or observed;
3. provide learners with a sense of accomplishment; and
4. relate back to the instructional set.[1]

Practice

If possible, it is best to have each group member practice the skill that has just been demonstrated. There are three basic methods of proceeding: 1) controlled practice, 2) independent practice, and 3) "coached" practice.

With controlled practice, each person does the same step at the same time with no one proceeding until all have accomplished the step. This allows for maximum control and close supervision. Errors can be corrected immediately. If expensive materials or sensitive equipment are involved, this protects against costly mistakes or losses.

Independent practice allows persons to practice on their own. Supervision can be requested as needed. The instructor can circulate asking and answering questions or making comments appropriate to each individual.

"Coached" practice is a compromise of the previous two approaches. Persons are divided into small groups and work together performing the skill and supervising each other. Often they learn very effectively from their peers and are more at ease to ask questions for clarification purposes. They can compare notes and integrate what each has learned separately. The instructor is free to circulate and to supervise as necessary.

Evaluation

Following the practice session, it is appropriate to evaluate each person's progress in developing the demonstrated skill. Oral questioning, written tests, and performance evaluations are all effective; however, the performance evaluation is probably most appropriate. Observing the skill performed and using a checklist which delineates each step, the instructor can assess each person's progress. The checklist can also include the interactional aspects with patients which go well beyond the actual performance of the specific skill.

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[1] Ibid. p. 13

THE OTHER SIDE OF THE COIN

Two teachers can have "the same" command of their subject matter and "the same" pedagogical skills and yet be described differently by their students. One teacher may be said to be quite good, whereas the other may be said to be quite poor as a teacher. The differences between instructors in many circumstances are often related to "delivery style." Approaching the status of the art of teaching, delivery style can be reduced to two essentials: teacher tactics and verbal and nonverbal behaviors.

Teacher Tactics

There are four basic teacher tactics which enable an instructor to be more effective in the delivery of demonstrations, and for that matter, the delivery of any lesson. These four teaching tactics are: involvement of learners, effective questioning techniques, reinforcement and feedback, and teacher enthusiasm.

To this point, educational theory has been kept in the background and only ramifications have been discussed. However, with regard to learner involvement, one maxim must be delineated—active learning results in greater, longer retention. When learning is passive rather than active, there is greater chance that, one, maximum learning will not occur and, two, that which does will soon be lost. In demonstrations learners can be involved in two primary ways; through questioning and through practice. It must be recognized that questions can be asked of learners not only for the purpose of assessing their level of learning but also for the purpose of motivating their mental participation in the lesson. The ensuing practice of demonstrated skills is an obvious, but important means of involving learners actively.

Effective questioning will be discussed in greater detail in another paper; however, it is important to point out that questioning is an effective teacher tactic. Specifically, questioning can be used by the instructor to:

1. arouse interest;
2. assess comprehension;
3. diagnose strengths and weaknesses;
4. review and summarize;
5. encourage discussions; and
6. guide problem solving.

Feedback and reinforcement used conjunctively are very useful in precipitating effective learning. Learners need to know if their responses and behaviors are correct or incorrect, appropriate or inappropriate. Feedback from the instructor accomplishes these needs and provides signals and

cues of how he feels about and reacts to their responses, attitudes, and performance in class. The instructor's enthusiasm, his reactions to responses, his patience or impatience, his attentiveness are all feedback to students and are part of their determining whether an instructor is "good" or "bad."

One of the most influential forces upon the learner's achievement and satisfaction is the instructor's enthusiasm. Compare the differing effects of the enthusiastic instructor and the unenthusiastic teacher upon their audiences even if they both have technically perfect deliveries and unquestionable command of their subject matter. The enthusiastic teacher is dynamic and energetic; his presentations and learner interactions are characterized by varied vocal inflections, animated movements, and gestures bringing attention to important aspects of the lesson. The enthusiastic teacher usually catalyzes learner interest, achievement, and satisfaction in the classroom, laboratory, or clinical setting.

Verbal and Nonverbal Behaviors

Although verbal communication is the primary method of teaching, nonverbal behavior also is communicative in that it minimizes, emphasizes, or actually replaces verbal messages. It is the same old story, "It's not so much what you said, but how you said it." There are several behaviors of which learners are particularly aware: use of voice, eye contact, gestures, movement, and facial expressions.

An effort should always be made to maintain variety in the voice. Inflection, speed, tone, and volume can be used to emphasize, and give meaning to material or ideas which are being presented. The instructor's voice can convey warmth, friendliness, approval, acceptance, or reinforcement to the learners. It can also be used to convey just the opposite. The manner in which words are delivered is just as important, or even more so, than the words that are chosen to be delivered.

The use of eye contact is an important dimension of the communication process. Direct eye contact is indicative of attentiveness, confidence, and openness. It keeps learners involved in the discussion. If the instructor is continually looking away, looking down at papers, or looking at materials he is using, learners will begin to perceive that he is not interested in them or is not sure of himself. Looking at certain persons or at certain sections of the group tells those who are not looked at on occasion that he is not interested in them.

Gestures punctuate, add emphasis, provide direction, and clarify messages which are communicated verbally. They give visual impressions to the spoken word. Gestures are important adjuncts to animation and enthusiasm on the instructor's part. Very similarly, movements of the instructor in and around the group can facilitate communication. If the instructor feels free to move beyond his desk or "territory," he can break down the invisible barrier that is often established between instructors and students. Moving closer to the group connotes instructor-learner interaction as opposed to

instructor-class interaction. Such movement is likely to help establish a more friendly, open relationship with the learners. This is conducive to effective communication.

Facial expressions express a great deal of information. Smiles, frowns, and puzzled looks really do not need words to get the meaning across. Facial expressions are ready sources of feedback to instructors and learners alike. The pleasant, friendly expression of the instructor readily provides positive reinforcement to the learner. Changes in facial expression can easily express disagreement or displeasure. In essence, the instructor can communicate easily saying, "I agree with you."; "That is correct."; "I am pleased." or if he desires just the opposite.

To be sure, teacher tactics and verbal and nonverbal behaviors can be used with several teaching techniques besides the demonstration. However, when teaching a specific skill that must be performed in a particular way, they become invaluable tools. The unique combinations of various tactics and behaviors affect the interaction processes between the instructor and learners. These interaction processes, in turn, very much influence the outcomes of the teaching-learning process.

THE POMR CONCEPT AS A GUIDELINE FOR EDUCATIONAL EVALUATION OF STUDENTS IN A CLINICAL SETTING

Maurice Levy, Ed.D.

Thursday, March 22, 1979

Didactic V

THE POMR CONCEPT AS A GUIDELINE FOR EDUCATIONAL EVALUATION OF STUDENTS IN A CLINICAL SETTING

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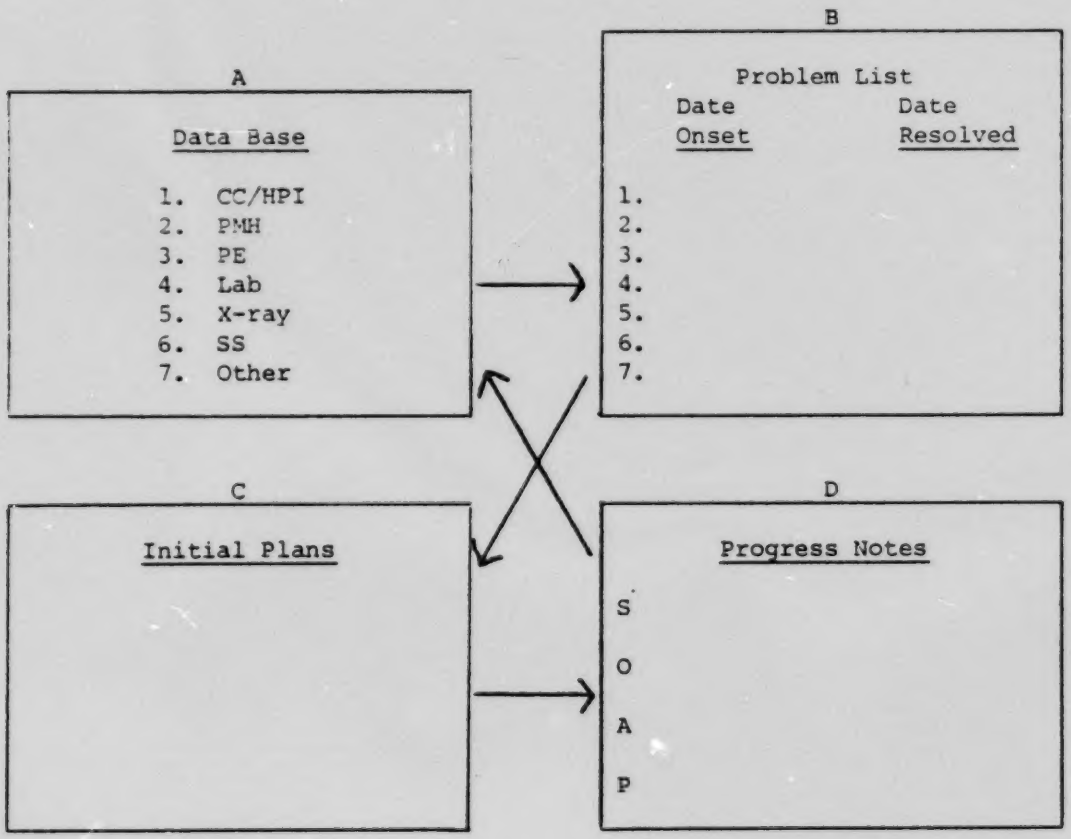
The concept of Problem Oriented Medical Records (POMR) as a system for recording data is one which could be extremely useful in many areas of medical educational evaluation, including the evaluation of students in a clinical setting. A basic understanding of the POMR system and how it works is essential to the comprehension of a Problem Oriented Evaluation.

The POMR system can be diagrammed in the following manner:



The first component for discussion in the POMR system is the data base. As can be seen in the diagram, the data base contains seven elements, which are as follows:

1. Chief complaint/History of present illness
2. Past medical history
3. Physical examination
4. Laboratory findings
5. X-rays
6. Special studies
7. Others

All of these elements are well defined and universally understood by those who utilize medical records. The unique and most useful aspect of this categorization stems from its acceptance and application by its proponents. There is little confusion as to what belongs in a data base and how that information is recorded there.

The second component, the problem list, serves as the table of contents for the medical record. The problem list is created by abstracting abnormal information from the data base, giving it a number and title, and identifying the location of the information in the record which relates to that particular problem.

The third component is the initial plan. This is where the strategy devised to solve or alleviate the problems which have been identified on the problem list is developed.

The fourth component of the POMR system, the progress notes, is an up-to-date record of the success of the plan and the status of the problem. The progress notes contain four elements which are termed subjective, objective, appraisal, and plans. The subjective element contains information gathered directly from the patient. This data is recorded first to emphasize its high priority, as it is diagnostic in most cases. Recorded second, the objective element is the one in which factual information related to the problem is noted. The appraisal element is where the subjective and objective data are analyzed and conclusions drawn. The importance of an appropriate and accurate appraisal cannot be underestimated. It is the key to the fourth element of the progress

notes, the plan of action. The plan proposes an immediate course of action as well as a guide for all future action. In other words, it is a systematically organized means of stating diagnostic, therapeutic, and patient education goals.

The remainder of this paper describes how these concepts can be used in the evaluation of students in a clinical clerkship.

The first step in the evaluation process is the preparation of the data base. Faculty must decide which aspects of behavior or performance are to be evaluated and how they are to be organized. The choice of the data to be collected should relate directly to the objectives of the clerkship or residency. For example, although they may never have been explicitly stated before, the objectives of a podiatrist collecting a data base are as follows:

1. To readily identify all pertinent normal and abnormal information which would assist in the diagnosis of the problem;
2. To gather information necessary to decide among management options;
3. To provide information regarding effectiveness of the therapy;
4. To document what has been done.

When choosing data to be included in the data base for the evaluation of students in a clinical clerkship, consider these same objectives. In other words, every piece of evaluative data collected should relate to one or more of the above points. An example of general, defined, data base categories for a clerkship might be:

I. Clinical sophistication of the student. Included in this category would be the problem-solving and logic skills of the student, the selection of appropriate diagnostic procedures, and the application of the student's clinical knowledge to each of his/her patient encounters.

II. Cognitive knowledge of the discipline. Data sought for this category would be performance on written and oral exams and the amount and quality of participation in rounds or discussion sessions.

III. Personal Maturity and Professional Image. This category would include data which the faculty feel is indicative of professional attitudes. Criteria that might be considered essential here would be responsibility, reliability, dependability, appearance, and relationships with patients, peers and faculty.

IV. Communications Skills. Information sought in this category would be listening skills, writing ability as measured by charts, reports, etc., and oral communications skills with all constituencies.

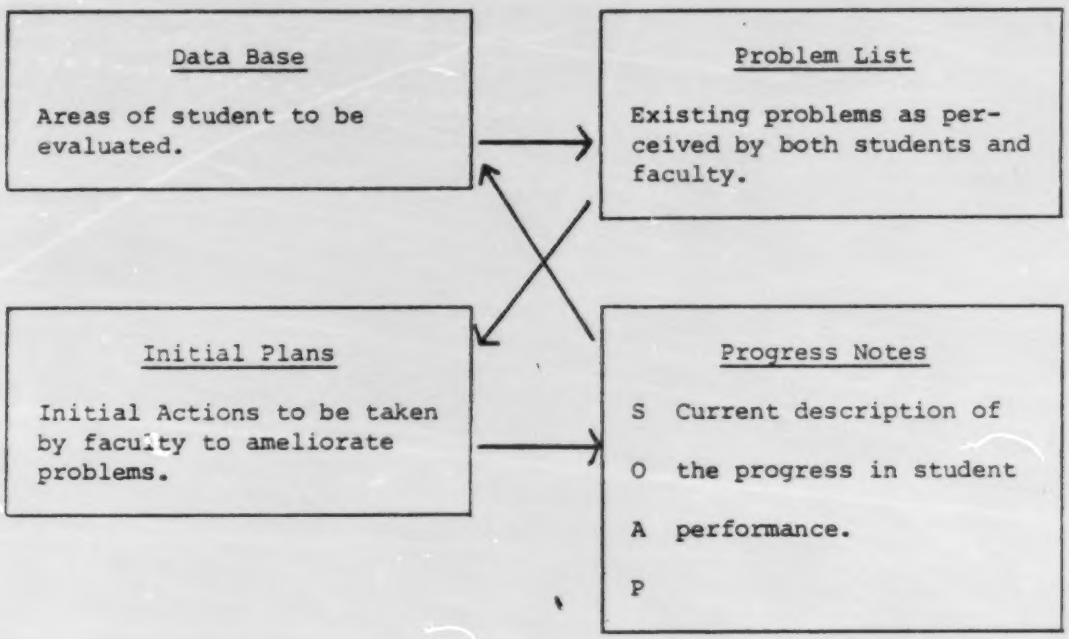
V. Procedures or Technical Skills. This category would contain data that might be specific to the particular clinical clerkship.

The next step in using POMR concepts is to develop a problem list. The problem list is constructed by identifying all abnormal data in the data base, which in this case means all negative feedback in any of the student categories, giving each piece of information a number and placing it on the problem list. With this readily accessible information on problem areas, the faculty can more effectively decide upon management options to remediate the student deficiencies. These management options dealing with the scope and direction of the efforts to improve student performance can be called the initial plan.

Careful records to document student progress should be kept. These records could be called progress notes, and their purpose would be to provide a current description of the status of each of the students enrolled in your program. If the progress notes were kept in true POMR style, then the data would be organized by subjective, objective, appraisal, and plans elements. The subjective element would contain information from the student on his/her perceptions of his/her own progress. The objective portion would reflect written and oral test scores and quality of performance with patients. The appraisal would be an analysis of the data collected in both the subjective and objective categories. Conclusions regarding the strengths and weaknesses of each of the students can then be drawn. The fourth element of the progress

notes, the plan, translates the appraisal into action. It differs from the initial plan, which states the immediate action to be taken, in that it guides subsequent actions. The progress notes are the mechanism which keeps the evaluation process dynamic by constantly focusing on student progress.

As can be seen from the following diagram, we now have a method which is systematically designed to collect and analyze student performance data.


Data Base
Areas of student to be evaluated.
Problem List
Existing problems as perceived by both students and faculty.
Initial Plans
Initial Actions to be taken by faculty to ameliorate problems.
Progress Notes
S Current description of
O the progress in student
A performance.
P

The advantages of a POMR organization of an evaluation of students in a clinical rotation are as follows:

1. The entire evaluation program is pre-planned and scientific in nature. Valid conclusions can be drawn.

2. The POMR program evaluation plan is logical and should be readily understood by professionals regardless of educational background.

3. It is systematically organized so that abnormal data can be readily identified and modified if need be. This greatly facilitates the process of updating and improving the record-keeping function for clinical programs.

SUMMARY

In concept, the student evaluation instrument can be compared to a pre-printed history or physical exam form where all areas to be evaluated are clearly defined and clearly relevant to the desired objectives of the program. The evaluation of students in a clinical rotation can be efficiently and systematically performed using POMR concepts. This system is especially useful in that medical (podiatric) faculty are already familiar with both the purpose and terminology of problem oriented medical records. The flexibility provided in the POMR concepts approach to student evaluation would certainly appear to be a most worthwhile innovation in the program evaluation.

TEACHING PROBLEM SOLVING IN MEDICAL EDUCATION

OR

UNRAVELING THE MAGICAL MYSTERY TOUR

Cherry McPherson-Turner, Ed.D.

Friday, March 23, 1979

Didactic VI

TEACHING PROBLEM SOLVING IN MEDICAL EDUCATION
OR
UNRAVELING THE MAGICAL MYSTERY TOUR

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INTRODUCTION

Survival has dictated that man become an adept problem solver. The ability to untangle the webb, to see beyond the obvious, to visualize consequences of alternate actions, has enabled one man to succeed where another failed. Problem solving is recognized as complex higher-order thinking, yet no precise delineations for mastery of the process have evolved.

Problem solving differs from other forms of thinking in that the correct response, i.e., solution, has to be produced by the thinker rather than elicited from her/him.[1] Consider the instructions to multiply one integer by another. In such an instance, the individual is asked to apply a mathematical operation. The specific instructions are designed to elicit a learned response. A word problem, however, requires that the learner recognize a pattern and then apply the appropriate operations. Bruner and his associates concluded that a problem is essentially a pattern of regularities that is either masked or so complex as to be initially unrecognizable.[2] The problem solving task becomes one of unmasking the pattern and applying the correct rules.

Gagné concurs with this assessment by noting that problem solving is "a process by which the learner discovers a combination of previously learned rules that he can apply to achieve a solution for a novel problem situation."[3] Medical diagnosis, the linchpin for subsequent patient care, essentially occurs as the doctor discovers that a previously learned disease pattern

applies to the specific case under investigation. Medical diagnosis is thus a rule-governed form of behavior largely dependent upon previous learning.

Although the relationship between the medical diagnosis and problem solving is clear, few medical curricula include formal instruction to develop problem solving skills. Students often learn clinical problem solving by direct encounters with patients or by observing expert physicians.[4] Of those institutions addressing problem solving skills, two primary strategies are employed. The vast majority of cases employ basic pattern recognition activities as means of teaching problem solving skills. The remainder provide students with other heuristics to guide the decision making processes. This paper seeks to (1) provide an overview of medical diagnosis as a problem solving model, (2) review the strategies of pattern recognition and provision of other heuristics as methods for teaching problem solving skills, and (3) suggest other possible variables as impact points for improving medical problem solving skills.

MEDICAL DIAGNOSIS: A TYPE OF PROBLEM SOLVING

Several models of diagnosis or clinical problem solving have been identified in the literature. The model presented in Figure 1 has been developed to illustrate basic principles of problem solving as determined by reported research and to allow examination of key intervention points for teaching diagnostic problem solving within medical curricula. Significant progress toward a theory of human problem solving has been made by Simon and Newell.[5] Within the micro arena of medical problem solving, a variety of investigators, as Andrew,[6] Bashook,[7] Gorry,[8] Kozielecki,[9] and McGuire,[10] have contributed to the current state of the art. It is interesting to note, however, that the benchmark studies of Elstein and his associates[11] provide the underlying concepts and data from which many other studies derive. The Diagnostic

DIAGNOSTIC PROBLEM SOLVING MODEL

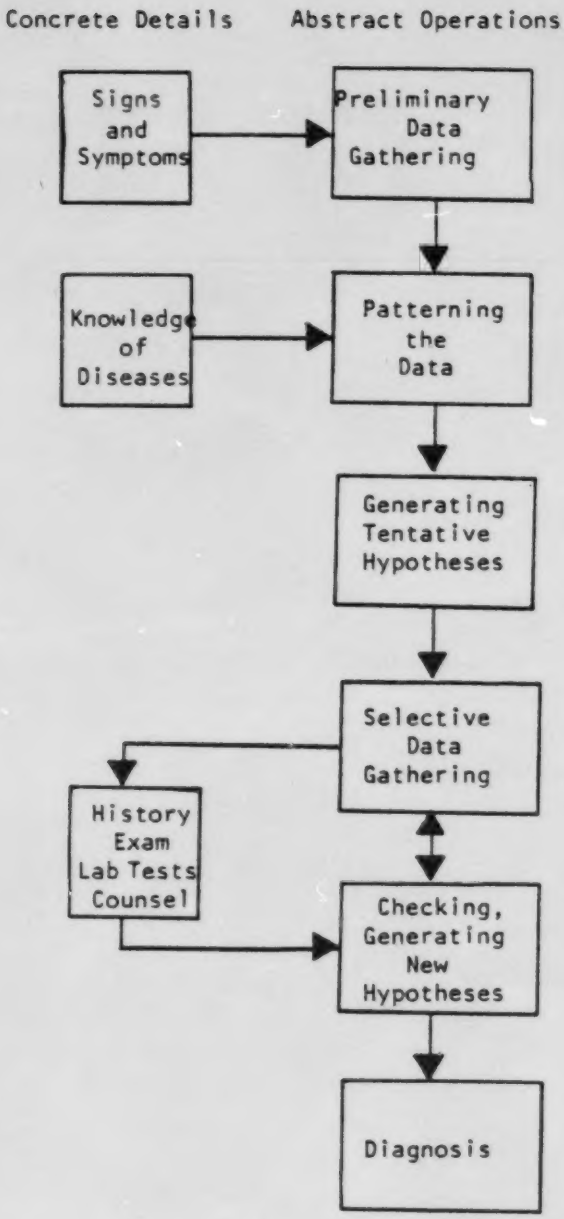

Figure 1

Problem Solving (DPS) model is based primarily upon extrapolations from the work of Simon and Newell and of Elstein.

The first stage of the DPS model, preliminary data gathering, refers to the initial patient/physician encounter. The presenting signs and symptoms constitute preliminary data acquired directly from the patient or from a referring physician. At this point, the doctor attempts to recognize patterns in the data that correspond to his own knowledge base of diseases. As the doctor organizes the preliminary data into possible patterns, he generates tentative hypotheses.

During these three stages of activity, the doctor rapidly moves back and forth between concrete details and abstract plans for problem resolution. Additionally, he processes information serially, or in a step-wise fashion. The first three steps, preliminary data gathering, patterning the data, and generating hypotheses, appear to occur within the first few minutes of the patient/physician encounter.[12]

Following the generation of tentative hypotheses, the doctor selectively gathers additional data to confirm or reject his hypotheses. Concrete data points include further history, physical examination, laboratory tests, or external counsel. The movement between concrete details and abstract planning continues as the doctor attempts to gather only the data necessary to confirm a diagnosis. The key organizing principle for his search is selectivity.[13] As the doctor acquires additional information, his selectivity increases. A cyclical process of checking hypotheses and possibly generating new hypotheses via selectively identified data continues until a diagnosis is confirmed.

Figure 2 presents three essential components of the diagnostic problem solving situation: the problem solver, the problem space, and the problem environment.[14] The problem space, as discussed previously, refers to the way

THE PROBLEM SOLVING CONTEXT

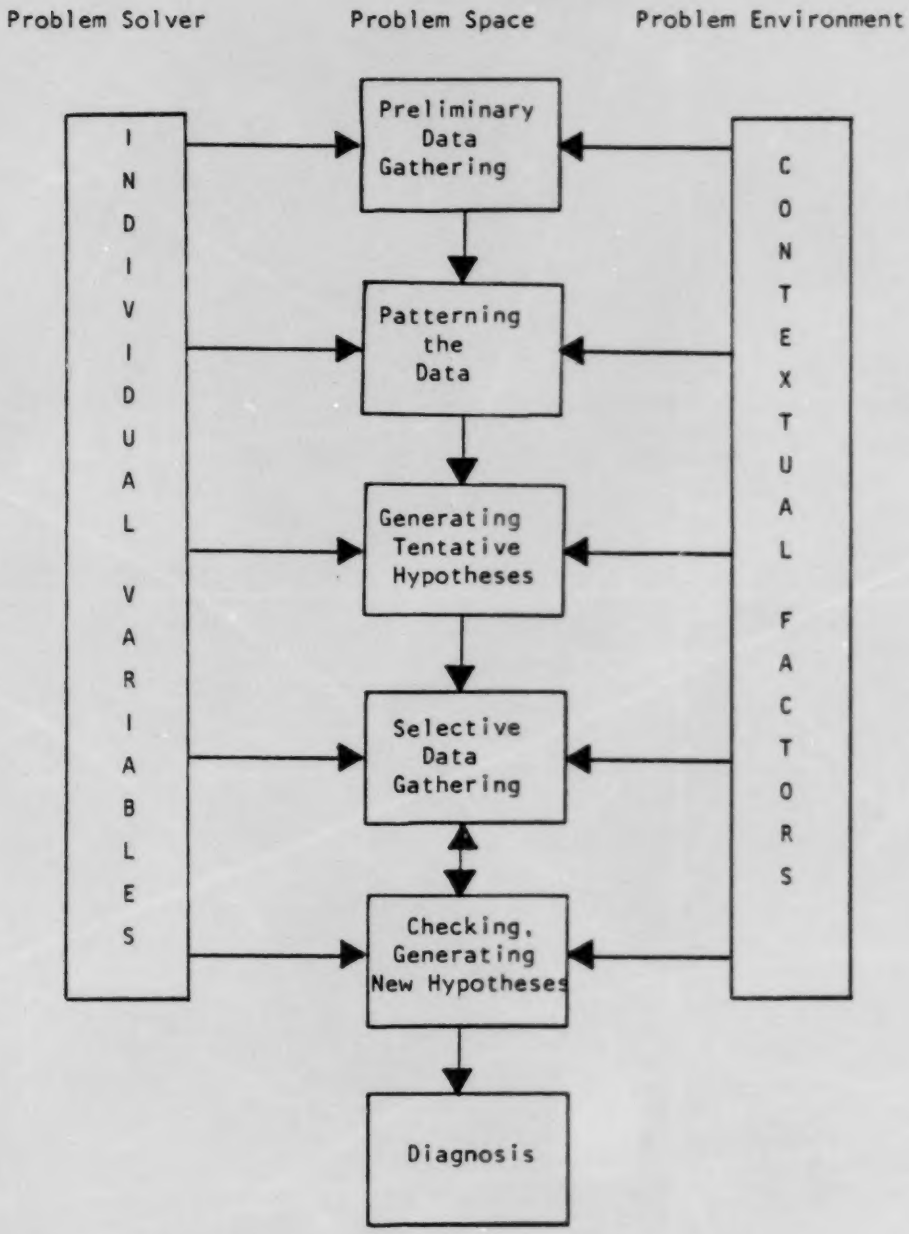

Figure 2

the problem solver organizes the problem for solution. The problem space is continuously effected by individual variables of the problem solver and by contextual factors of the problem environment.

As the doctor progresses through the problem space, he will be guided by his own knowledge base, which includes all previous experiences, and by his personality and cognitive variables. He will employ previously learned concept names, i.e., diseases, as organizers. For each disease concept, he will have acquired a code of conditions, or symptoms, that are arranged in a specific sequence or pattern. The presenting signs and symptoms are often the barest outline of a pattern. The doctor's task is to fill in the outline to the degree necessary to reach a conclusive diagnosis.

The doctor's task is further compounded by personality variables and by cognitive variables. A variable such as locus of control may impact upon the doctor's willingness to seek external counsel, while risk taking or self-assurance variables may determine other data gathering processes. These few examples hopefully illustrate how the personal variables of one doctor cause him to differ as a problem solver from another doctor confronted by the same problem.

Contextual factors, or the problem environment, also influence how different problem solvers approach identical tasks. Bashook cites as intervening factors the context of care: whether acute, chronic, maintenance, or emergency.[15] Other contextual variables include such factors as the knowledge base of the medical disciplines, equipment and other available staff, or extraneous factors regarding the patient. Any number of factors can intervene to alter appropriate or potential courses of action. The problem solver interacts in a complex and changing environment and must constantly adapt to its demands.

While the similarities between problem solving and medical diagnosis are great, differences do exist. One particularly significant difference is that problem solving is a process directed toward a defined solution state. Task instructions are often provided to guide the individual to the solution; moreover, many potential solutions often exist for a given problem. While a crossword puzzle has only one correct solution, marital difficulties can be resolved so that end states vary from reconciliation to divorce. As soon as the problem solver selects the desired end state, all activities become goal-directed.

Diagnostic problem solving, however, does not have a comparable goal-directed solution. Instead, the diagnostic process is much akin to the Magical Mystery Tours recently popular in England. The English often plan their vacations via travel agencies. Instead of planning a holiday to a particular resort, many Englishmen and women have engaged tour agencies to arrange their vacations to unspecified destinations. The travelers depart on the arranged journeys, learning their destinations only upon arrival. Similarly, the physican embarks upon a Magical Mystery Tour, only knowing the destination (diagnosis) when the journey has ended.

CURRICULAR INTERVENTIONS

The DPS model illustrates two primary intervention points for medical educators. The first point is patterning of the data. It is evident that the vast majority of diagnostic problem solving occurs as the doctor recognizes common regularities in a variety of individual cases.[16] It is therefore both worthwhile and expedient to teach students to recognize a core of basic disease patterns. The second intervention point is selective data gathering. Generic guidelines can be provided to students for their use as they decide what additional data to collect under given circumstances and as

they decide how to interpret the data already collected. These tools, or heuristics, are devices designed to direct inquiry and are applicalbe across content areas. A curriculum designed to teach medical problem solving therefore has two foci: content, as represented by core diseases, and process, as represented by heuristics.

Before investigating how medical problem solving is currently taught, a word about utilizing a model of the problem solving process as a teaching device may be helpful. While familiarizing a student with a problem solving model would be a practical means of teaching her/him the concept "problem solving," such activity will not transform her/him into a problem solver. A model attempts only to replicate a process. Its usefulness accrues primarily as a conceptual device for researchers and as a curriculum design tool for educators.

PATTERN RECOGNITION

A number of strategies are currently employed to teach students to recognize certain basic disease patterns. These are often touted as teaching problem solving, which, of course, they are not. Instead, these strategies teach a particular content in an inquiry mode.

Typically, the student is presented with a certain amount of minimal information concerning a specific case. This data may be taken from actual patient charts or may be identified as typical presenting signs and symptoms by a group of faculty. A series of data gathering opportunities or treatment options are provided to the student as s/he attempts to resolve the problem posed by the data. These options are decision points; the student must determine what actions to undertake in the most optimal sequence. The options s/he requests provide the type of feedback s/he would receive if s/he were actually practicing medicine. This realistic modelling of the decision making

process creates situations in which the student must guard against errors of omission (failing to select courses of action beneficial to the patient) and errors of commission (choosing courses of action harmful to the patient).[17] These patient management problems, or PMPs, cover either diagnosis or both diagnosis and management. Two excellent explanations of PMPs are provided by McGuire[18] and by Andrew.[19]

This approach to problem solving was pioneered by Rimoldi with the development of the Test of Diagnostic Skills.[20] Christine McGuire has been instrumental in the refinement and dissemination of the PMP concept. Although PMPs were originally designed to teach and/or evaluate clinical problem solving, such has not been documented. Process skills apparently do not transfer from one learning situation to another via PMPs.[21] What is learned and transferred is the content.

Several methods for simulating patient problems have been developed. Paper and pencil versions provide the student with a brief written introduction followed by exercises in which the student selects alternate procedures. Special pens or simple pencil erasers enable the student to receive appropriate feedback. Photographs, slides, tapes of auditory symptoms, or lab results are a few of the modes used to provide feedback.

A second print version uses cards printed with questions the student may choose to ask. As the students select a question, the information requested is printed on the reverse side of the card. The student is free to select additional cards until a diagnosis is reached. McMaster has employed this technique in the development of the Portable Patient Problem Pack (P4).[22]

Both of these print methods have similar advantages. The materials are self-instructional, are inexpensive to reproduce, and can be developed by faculty members. Students can easily be provided with multiple variations on a single theme. Additionally, students are provided with a means of

appropriate practice apart from the actual patient encounter. The difficulties of securing enough patients with a specific problem and of providing the patient adequate comfort and care are circumvented. An unavoidable negative factor, however, is that the lists of alternatives cue the student to procedures he might not otherwise conceptualize.

Other mediated forms of PMP simulations include computer simulations and a robot simulator. Computer simulations customarily differ from paper PMPs in that the computer programs are written in an inquiry mode. Following a print-out of the patient problem, the student poses questions to the computer in a natural language format. Both the computer and robot simulators compensate for the cueing effect of paper PMPs, but are much more costly.

HEURISTICS

A number of investigators are studying how physicans actually arrive at diagnoses by videotaping patient/physician encounters and subsequently asking the physicians to recount their thinking processes. Others are using PMPs as records of the sequences various physicians employ in diagnosing patient conditions. As skills relating to the diagnostic processes are being determined, it is becoming possible to develop tools or guides to enhance the likelihood of utilizing these skills effectively. De Bono calls such heuristics "attention directors."[23] By directing an individual's attention to a particular decision point or to certain variables in a given context, the heuristic enlarges the perceptual range of the problem solver. The problem solver attends to or interprets cues in ways that he might not otherwise consider. These heuristics are designed to apply across content areas by emphasizing useful processes.

One attention director developed by de Bono is the PMI.[24] Students are instructed to consider whether variables are Plus, Minus, or Interesting

factors regarding decisions. In a medical context, students would be directed to determine whether cues are plus, minus, or irrelevant factors regarding $hypothes_1$, $hypothesis_2$, ... $hypothesis_n$.

Elstein has noted the following "indexing cues" used by physicians to link findings to possible causes:

1. Statistical probability suggests the likelihood that a specific disease is causing the patient problem.
2. Seriousness of one disease outranks another's probability rating.
3. Treatable diseases rank higher than nontreatable ones.
4. Novel hypotheses maintain intrigue and insure exploration of unlikely possibilities.[25]

These indexing cues can be reformulated for use as decision rules by students.

Finally, a study conducted by Michael J. Gordon investigated the role of heuristics in medical problem solving. Gordon provided five guidelines to medical students as heuristic devices (see Table I).[26] Findings of Gordon's study revealed that students provided with problem solving strategies performed better on clinical problem solving tasks than did students who did not have access to these strategies. Studies of other inquiry tools used with public school children support the conclusion that heuristics can improve the problem solving process.[27] In medical education, heuristics need to be systematically developed for use as aids in diagnostic problem solving.

COGNITIVE STYLES: POSSIBLE VARIABLES IN MEDICAL PROBLEM SOLVING

A promising area for research and development regarding the improvement of problem solving skills is that of cognitive styles. Recent publications reference McGuire's identification of certain problem solving styles evidenced by doctors and suggest that these style variables be investigated.[28] Elstein suggests basic style differences between doctors who employ multiple working

Table 1

HEURISTICS FOR MEDICAL PROBLEM SOLVING*

1. Each piece of information requested by the problem solver should be related to a plan of attack for solving the problem. There should be a plan and a well defined purpose behind every question asked.

2. No diagnostic hypotheses should be more specific or more general than the evidence on hand justifies.

3. There should be at least two or three competing hypotheses under consideration at a particular time. Each piece of information should be evaluated with respect to all hypotheses presently under consideration.

4. Whenever a new or revised hypothesis emerges, the information previously collected (particularly the information from the middle of the sequence of questions asked) should be reviewed. The problem solver should attempt to categorize the previously elicited findings as either tending to confirm or tending to disconfirm his new hypothesis.

5. When high cost (expensive, uncomfortable, or risky) procedures are being considered to confirm a hypothesis, the problem solver should consider the possibility of lower cost procedures which might instead rule out one or more diagnostic possibilities in order to make the high cost procedure unnecessary or to increase the probability that the high cost procedure will yield the definitive diagnosis.

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*Quoted from Michael J. Gordon, Heuristic Training for Diagnostic Problem Solving Among Advanced Medical Students. Unpublished Ph.D. Dissertation (East Lansing: Michigan State University, 1973), as reprinted in R.G. Bridgman and M.J. Gordon, Curricular Uses of a Recent Study of the Role of Heuristics in Medical Problem Solving, (San Francisco: AERA, 1976), ERIC Document Reproduction Service No. ED 124420.

hypotheses and doctors who focus on a single hypothesis.[29] Bashook suggests that cognitive style dimensions may account for these differences.[30]

French has identified two basic problem solving styles: a systematic approach, and a less orderly visualizing approach.[31] French also suggests that these two styles may relate to the cognitive style variables of field independence/field dependence and scanning.

For those unfamiliar with the various cognitive style dimensions, cognitive style refers to ways in which individuals process information. These processes of receiving, organizing, storing, and remembering information differ among individuals. Although only minimal investigation has been pursued, it appears that educational interventions can be effective in altering or improving the use of certain cognitive style dimensions.[32] If certain cognitive style dimensions relate to strategies of medical problem solving, then interventions could be designed to alter or improve the use of those particular styles.

Field independence/field dependence constitutes one dimension of cognitive style that appears to be related to medical problem solving. Witkin and his associates found that certain individuals, identified as analytic, are able to locate figures in an embedded context much more easily than others, who are identified as global.[33] In diagnostic problem solving, a particular pattern of relevant cues must be separated from the embedded context represented by all cues. Using another measurement of cognitive style, Scott has concluded that analytic learners can more easily extract relevant and irrelevant items of information in problem solving than can nonanalytic learners.[34] It appears then, that analytic, field independent strategies would enhance medical problem solving.

Another cognitive style dimension that may be directly related to medical problem solving is scanning, which refers to how attention is deployed. Some

individuals use extensive search strategies, while others employ a narrower search strategy. The degree to which individuals scan broad areas may relate to the shot-gun pattern noted by McGuire, while scanning narrow areas may relate to the constricted pattern. At this point, exploratory research needs to be undertaken to determine whether any relationships in fact exist between particular cognitive style dimensions and problem solving styles characteristic of physicians.

Cognitive style variables that could influence medical problem solving are listed in Table II along with lists of problem solving skills needed by medical problem solvers. The possible relationships between and among these variables indicate impact points for improving problem solving abilities.

Since cognitive styles are processes functioning across content modes, strategies to enhance the use of certain dimensions in particular situations would be beneficial. Successful efforts to improve information processing strategies of children have already been reported.[35] It therefore seems feasible to propose that different cognitive styles be cultivated for different problem situations, so that the physician is able to select an optimal strategy in terms of the contextual factors in the problem environment.

SUMMARY

As a special subset of problem solving, medical problem solving includes diagnostic problem solving and patient management. This paper has examined only the first part of the overall process, the medical diagnosis, in an attempt to illustrate how problem solving skills are currently being addressed in medical curricula. Simulations of patient problems, while used to teach and evaluate clinical problem solving, are primarily successful in teaching recognition of disease patterns. Heuristics facilitate the processes a student uses by directing his attention to key decision points.

Table II

MEDICAL PROBLEM SOLVING SKILLS
AND POSSIBLY RELATED COGNITIVE STYLES

Problem Solving Skills*	Cognitive Style Dimensions
Efficiency in obtaining data	Field Independence/Field Dependence
Identifying relevant and irrelevant data	Scanning
Recognizing important cues	Risk Taking
Verifying information sufficiently	Flexibility
Applying knowledge appropriately	Locus of Control
Using multiple hypotheses	Complexity/Simplicity
Recognizing compounding difficulties	Hypothesis Testing
Avoiding premature commitment to early hypotheses	Conceptualizing Styles
Selectively gathering data	
Utilizing a variety of resources	
Probing into the unknown	
Utilizing disease concepts previously learned	
Progressively narrowing the area for a search	
Recognizing regularities in the data	
Analyzing and synthesizing data	
Selecting appropriate care procedures	
Monitoring patient progress	
Modifying and adapting to changing conditions	
Following up on new cues	

*6, 8, 10, 11, 16

As one considers efficacious methods for teaching medical problem solving, the following suggestions should be considered:

1. A core of basic disease patterns should be identified and taught to students via patient management problems.
2. Heuristic devices should be developed to guide the inquiry process.
3. Strategies to broaden perceptual fields organized around cognitive style variables should be considered as potential means of improving problem solving skills.

It seems very likely that the medical educator, much like the doctor in search of the unknown diagnosis, has embarked on her/his own Magical Mystery Tour. Where we shall end the journey is still unknown, but the trip itself presents a constant challenge.

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TEACHING AND ASSESSMENT OF THE INTERPERSONAL SKILLS OF INTERVIEWING

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Friday, March 23, 1979

Didactic VI

TEACHING AND ASSESSMENT OF THE INTERPERSONAL SKILLS OF INTERVIEWING

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Introduction

The demand for health care providers who can communicate effectively with patients has stimulated concern for the inclusion of interpersonal skills instruction in professional curricula. These skills are important for success in any medically related profession.

The health care provider is dependent upon the patient for an accurate history. The medical interview has been considered as the tool for obtaining clinical data. Unfortunately, the traditional medical interview, characterized by interrogation, is not conducive to interpersonal communication with a patient. Interpersonal communication facilitates rapport between the health care provider and patient. Without rapport, treatment and prevention of disease are improbable.

It is the interpersonal skills of interviewing that determine whether a relationship, beneficial to health care, will be developed and maintained. Inadequate training in interpersonal skills has been shown to lead to lack of patient satisfaction[1] and noncompliance with treatment regimens.[2] In general, the doctor/patient relationship has been shown to influence patient cooperation, compliance, satisfaction and therapeutic outcomes.[3-10]

The ability to elicit and deal with patients' feelings and values is often as important to success in resolving health problems as the ability to diagnose and treat disease. Although it is generally accepted that emotional and psychological variables influence health, this affective dimension is oftentimes ignored, resulting in the loss of emotionally sensitive information.[11] Sensitivity to patients' feelings is too important an aspect of health care practice to

be ignored. "As Rasche[12] and colleagues expressed it: "In a medical setting it is inappropriate to avoid or cover up feelings. Patients are concerned about the seriousness of their symptoms, the probability of recovery, and the effect of illness on their usual activities (p. 591)." By failing to attend to the psychosocial factors that maintain or modify symptoms, the doctor is faced with an ineffective treatment plan or a noncompliant patient.[13]

It can be said, then, that the interpersonal skills of interviewing constitute the modus operandi for the establishment, development and maintenance of an affective/effective relationship between the health care provider and patient.

Toward an Understanding of Interpersonal Skills

Ward and Stein[14] proposed that excessive emphasis has been placed on the content of the interview to the detriment of the process of interviewing. Thus, when what the interviewer obtains from the patient becomes more important than how it is obtained, there is little incentive for the interviewer to direct efforts at improving interpersonal skills. Their contention is especially true in view of the traditional medical interview which emphasized only symptom-oriented content and for which interrogation seemed appropriate. Interrogation is an insensitive interviewing style. Such a style hinders the flow of interview communication, the type and quality of information and the doctor/patient relationship.[14] Interpersonal communication skills, on the other hand, are helpful for efficiently eliciting biological, psychological and sociological data, as well as for facilitating the therapeutic relationship.

There appears to be substantial consensus as to which interpersonal skills are important for facilitating communication within the medical interview. First and foremost of these skills is attentive listening. Attentive listening is an active skill. It involves not only paying attention to what the patient

is saying but also observing, identifying and accurately interpreting the patient's nonverbal cues. As Waldron[15] describes it, communication involves listening to the patient, not in a passive manner but while using judiciously spaced questions and other responses designed to elicit a valid account from the patient. What the interviewer says in response to the patient's statements indicates to the patient whether he/she is being listened to at all or accurately so.

Verbal response skills considered to facilitate communication include:

1. Minimum verbal[16,17] - a short utterance such as "yes" or "I see" that is used most often to communicate attentive listening.

2. Probing,[12] nonleading,[18] open-ended,[17,19] unbiased,[20] and exploratory[16,21] questions - a response in question form that requires more than a minimal or one-word answer.

3. Clarification[18,20] or paraphrase[17] - a question or statement signifying the need for more clarifying information. Paraphrasing goes one step farther than clarification--it is a statement in one's own words that conveys the meaning of the patient's comments.

4. Reassurance, encouragement or supportive statements.[12,19,20,22]

5. Empathy,[16,19,11,23] reflection[17,20] or understanding[12,24] - a statement usually consisting of affective words used to reflect the patient's feeling state.

6. Confrontation[16,19,25] - presentation of discrepancies in the patient's account.

7. Summarization[16,17] - a series of statements used for tying together the main points discussed during the interview.

The appropriate use of silence also is considered a legitimate response.[19,25] Silence is an indication for the patient to continue a train of thought.

Behaviors have been identified that inhibit effective interaction.[26] The use of technical language confuses the patient who does not understand it. Viewing the patient as a disease possessor rather than as a person and disregarding the patient's dignity, privacy and comfort jeopardize the therapeutic relationship.

The Need for Formal Instruction

In the past, medical interviewing and the doctor/patient relationship was considered to be an "art" and as such, not amenable to the same instructional methods used for teaching clinical skills. As a result, medical education ignored the formal teaching of communication skills "relegating them to students' intuitions or simply exposing students to the personal interests and mannerisms of specific instructors."[27] Although clinicians may be effective communicators, it does not necessarily follow that their students will acquire the same skills vicariously.[28]

When instruction is based upon the assumption that communication skills are acquired vicariously, student learning of these skills is left to chance and, in some instances, thwarted. The anxiety that students experience when tossed into an encounter with a patient for which they are not prepared forces them to adopt modes of interaction that preclude the development of interpersonal skills.[30] Thus, communication skills cannot be assumed to result simply from observation or general experiences. Indeed, "example is not enough and interpersonal skills must be made more explicit"[29] so that provisions can be made for them to become part of the student's experience in training. Without formal instruction, medical student/patient interaction tends to center on the discussion of events, things and ideas (cognitive content) rather than emotions (affective content).[12]

Fortunately, educators no longer believe that interviewing skills are too intangible to teach. Courses of instruction on the interpersonal skills of interviewing assume that verbal dialogue can be labeled or categorized and thus taught. Jason[31] and colleagues contended that interactions are teachable, just as any other clinical skill is teachable.

Teaching Interpersonal Skills: An Overview

Interpersonal skills are considered to have been learned when students

demonstrate the ability to perform these skills as the interview situation calls for them. That is, the skills must become natural behaviors in students' repertoires. Learning to use interpersonal skills needs to be distinguished from learning about interpersonal skills because there is evidence that interviewing performance may be rather independent of cognitive knowledge of the interviewing process.[12,32-35] Even when students know what they are supposed to do, there is no guarantee that they will apply that knowledge efficiently. The results of a study conducted by Phillips and Agnew[36] may account for this phenomenon. Their study indicated that the skill of being understanding toward patients is "...considerably more than a simple extension of knowledge of interpersonal relations..." The problem appears to entail transfer of learning, i.e., transferring cognitive knowledge about interviewing skills to the actual performance of them.

Instruction that consists only of lecture-demonstrations, assigned reading and patient interviews with little feedback from instructors is, by nature, impersonal and not suitable for teaching interpersonal interaction skills. Theoretical instruction with little practical or clinical application is unlikely to facilitate transfer of knowledge about interpersonal skills to the actual performance of them. The specific learning activity provided by a course is an important variable to consider for interpersonal skills development.

Numerous methods and combinations of methods and materials have been used to teach interpersonal skills to medical students.[12,14,15,17,23,33-46] A comprehensive comparison of any of these methods is difficult to provide because there is considerable variation among the courses. However, when emphasis is placed on performance of the interpersonal skills, rather than on cognitive knowledge of interpersonal skills, common features emerge. Use of group-process dynamics, skills practice in either simulated or real situations, and feedback

are shared features. These features are consistent with recommendations[41] of the appropriate methods for promoting transfer of cognitive knowledge of interpersonal skills to their actual performance. In addition, videotape playback of student interviews is considered to be a valuable method for providing direct feedback.

An Instructional Philosophy

Theories and philosophies of learning are often helpful as frames of reference from which to make instructional decisions. The instructional philosophy of Carl Rogers, as set forth in Freedom to Learn,[47] is nondirective, or student-centered. According to Rogers, students, given an accepting environment, are capable of using their internal resources to become more self-aware, to grow and to develop. Skills for personal effectiveness and interpersonal communication are developed within an environment that provides positive learning experiences for, and empathic interaction with, students.

The role of the instructor is that of a facilitator of learning. The instructor is expected to practice, in his/her dealings with students, what he/she preaches in the way of interpersonal skills. Rogers' principles and guidelines for facilitating learning are quite suitable for teaching interpersonal interaction skills.

What Instructional Methods Can Best Be Employed to Help Students Learn Interpersonal Skills?

The learning of interpersonal skills is a developmental process that begins with cognitive knowledge of the types of interpersonal skills and the process of interviewing. Learning activities should provide opportunities for students to identify and practice skills that they will eventually use in real life interview situations and to internalize knowledge of these interpersonal skills to the extent that the knowledge will, hopefully, transcend cognition and become a natural behavior. For instance, eventually the student should not have to stand

with a patient and think to him/herself: "The patient's statement requires an empathic response from me; an empathic response means to put myself in the patient's shoes; empathic responses sound like...so this is what I should say... and this is what my nonverbal should look like..." What to say and do will become natural.

Preliminary Activities

Many students believe they already are adept at interpersonal skills or that interpersonal skills are acquired easily. Therefore, students should be provided with an opportunity to prove their skillfulness, or their ineptness, by conducting a pre-course interview with a simulated patient. Videotaping pre-course interviews provide students with an opportunity to observe their own behavior. It usually does not take more than a few minutes for students to recognize their own limitations. Being confronted with one's own limitations is an experience that is threatening to the self. In order to lessen student anxiety, the instructor can also conduct an interview. Students then can view and critique the instructor's interview. Students derive significant benefit from this experience. It helps to relieve the embarrassment concerning their own interviews. This activity fosters a positive learning atmosphere. Students begin to view the instructor's role as a facilitator of learning rather than as an interpersonal skill expert or "know it all." A positive attitude of mutual assistance and cooperation is nurtured when students realize that the instructor, together with students, will learn from each other. Hence, the learning atmosphere is closely allied with Rogerian[47] guidelines.

Students' reactions to the interaction which took place in the instructor's interview should be elicited in group discussion. In this manner, students become aware of how the interviewee was affected by what the interviewer said and did and vice versa. Such discussion serves to establish an awareness of the

effects that people have on each other. Videotaped vignettes can be used to further develop student awareness. For this experience, each student is instructed to pretend that he/she is present in the room alone, and that the person who appears on the television screen will be talking to him/her. After each vignette, students should be asked to share how they were affected by what they saw and heard. That is, what feelings did they experience and how did the actor manage to make them feel that way? Students usually react intensely to actors in the vignettes. The more intense student reactions are, the more quickly they comprehend the magnitude of how their patients will be affected by what they say.

Reading Materials

Reading material should serve to acquaint students with interpersonal communication principles and terminology. It also should provide definitions and examples of specific interpersonal skills and tell when and for what purpose each skill is used during an interview.

Interaction with Televised Vignettes

Reading an example of an effective response statement is not the same as hearing and seeing it. In a videotaped vignette, a patient makes a statement which is followed by two responses from the interviewer. One of the interviewer's responses is an example of an appropriate response and the other is not an appropriate response. After seeing the patient and hearing his/her statement, the videotape is stopped. Students should be asked to share how they would respond or how they feel like responding to the patient. These responses can be written on a chalkboard. The videotape should then be continued in order to hear the interviewer's responses. Students should be asked to discriminate between the two responses and suggest how the inappropriate response can be improved. Moreover, students should provide as many appropriate responses as

they can think of. The responses initially given by students to the patient's statement should be reviewed, evaluated, and improved by the entire class when necessary.

In summary, the procedure described so far includes the following steps:

1. Students discriminate between appropriate and inappropriate responses;
2. Students practice reconstructing inappropriate responses; and
3. Students create appropriate responses.

The vignettes are important, not only because they allow the student to hear what a suitable response sounds like, but also because students are able to see the nonverbal behavior that coincides with it. All patient statements and interviewer responses should be derived from situations that have occurred in actual medical practice.

Written and Experiential Exercises

A number of patient statements can be provided to which students can write what they feel is an appropriate response. Students learn alternative responses from each other when all the responses are shared and discussed. Cognitive/affective written exercises can be developed specifically to assist students in differentiating between factual and feeling portions of a patient's message. This differentiation is important for getting in touch with a patient's needs and for deciding what kind of response statement would be most effective in dealing with that patient.

Students can also practice producing spontaneous, rather than contrived, responses to a patient's statement through role playing. For this activity, students volunteer to play the role of either a patient or the interviewer. Each pair of students role play while the remainder of the class observes the interaction. The "patient" reads a statement and the "interviewer" responds. The "interviewer" evaluates the response that he/she gave and may ask fellow

classmates for suggestions that would improve the effectiveness of the given response. All students should be encouraged to provide additional response statements. Similar experiential exercises can be used for all other skills.

According to Rogers,[47] significant learning occurs when external threats are held to a minimum. Therefore, no criticism should be given by fellow students or instructors unless the role playing student requests it. This helps to ensure an atmosphere that is as nonthreatening to the learner's self as it can be. Instructors should also be willing to participate in the role playing activity.

An important function of role playing is that it requires the student to experience a situation as the patient experiences it. Relating effectively with a patient on an interpersonal basis is a skill that is dependent upon an appreciation for the patient's perspective.

Practice Interviews

Much of the learning process described thus far is descriptive of the learning of a single response mode at a time. Students need practice in using each type of response whenever it is called for in the interview situation and to do so spontaneously. Therefore, students should participate in several practice interviews during which they are expected to demonstrate a particular response mode whenever and wherever it is relevant to what the patient says. The interview situations should not be known to them beforehand. These interviews can be conducted with a simulated patient in a typical office or examination room. The interviews should be videotaped for review and feedback purposes. Useful suggestions from classmates are usually welcomed by each student.

For at least one practice interview, the individual student and the instructor alone should view the videotape. During this review, the instructor should remain nonevaluative. The instructor is present only to help the student

verbalize the thoughts, feelings and reactions that he/she experiences during the interview. The instructor may also inquire about what the student thinks the "patient" was feeling throughout the interview. This procedure is based on interpersonal process recall.[21] It is employed to assist students in developing an openness to and understanding of their experiences as recommended by Rogers.[47]

Although the videotaped interviews are developed specifically for providing students with practice and performance feedback, they can be used for review purposes as well. For example, as students view a videotape, they may be asked to call out the response modes used by the interviewer as these responses occur, thus giving students practice in recognizing instances of and distinguishing among all of the response modes.

Videotape playback provides a review of the nonverbal as well as the verbal aspects of an interaction. Nonverbal cues frequently signal the full meaning of a verbal statement and the comfort or discomfort of both the interviewer and the interviewee. A videotaped interview may be viewed initially without sound. During the silent playback, students can practice identifying and interpreting nonverbal cues. Moreover, they then can use these cues to synthesize a synopsis of the interview. The videotape is played once again with sound to compare the synopsis with what was actually said in the interview.

Videotapes may be stopped before the interaction is terminated, at which time students may be requested to provide a suitable summarization. Videotape playback helps students derive a feeling for what a complete interview, with all of the interpersonal skills incorporated into it, sounds like. In addition, each student increases his/her own response repertoire by observing the interview performances of fellow classmates.

Summary

Several activities believed to enhance the learning of the interpersonal

skills of interviewing are described. The student is provided many ways to participate actively and responsibly in the learning process. During small group discussions, students are encouraged to talk to each other rather than talk at the instructor. Role playing and practice interviews involve both the affective feeling and cognitive intellect. All of the experiential exercises emphasize learning by doing. Lack of criticism from either instructor or fellow classmates provides not only a nonthreatening atmosphere but also encourages students to value self-evaluation as being primarily important and evaluation by others as secondary. All of these learning activities are in accordance with Rogers' guidelines[47] for facilitating learning.

Assessing Interpersonal Skills

One indication of the effectiveness of the teaching of the interpersonal skills of interviewing is student learning. As mentioned previously, interpersonal skills are considered to have been learned when students demonstrate the ability to perform those skills whenever the interview situation calls for them. Systematic attempts have been made to assess behavioral changes in student interviewing performance. Three major categories of assessment methods[63] can be derived from these attempts: direct, indirect, and outcome indices. What follows is a brief description of the types of assessment procedures characteristic of each major category.

Indirect Assessment

Of the indirect assessment procedures, anecdotal reports and student self-reports estimating learning gain prevail.[25,43,45,48-50]

Another common method involves videotaped or filmed segments of interview interaction. Interview action is stopped at certain points and the student is provided with multiple statements from which to choose what the interviewer should say next.[12,26,33,46,51-53] A variation of this approach involves requiring students to

write a response when the action is stopped. Students' written responses are then rated in reference to a particular empathy scale.[11,23]

Attitude or personality instruments also have been administered to students.[23,51,54] In this manner, students' levels of "acceptance of others" or their attitude about authority are measured. The underlying hypothesis is that students' scores on these measures should change after participation in an interpersonal skills course.

Direct Assessment

Actual observation of student performance of interpersonal skills in the interview situation differentiates direct assessment from indirect assessment. The procedure entails videotaping students' interviews and training evaluators to identify, record and categorize verbal interactions. The unit of behavior analyzed ranges from identifying only those skills taught to classifying every utterance of both the interviewer and interviewee.

In most instances, only the process of the interview (i.e., verbal interaction) has been assessed.[12,17,21,22,33,37,46] Several investigators[18,44,57,59,60] have adopted the interaction analysis work of Flanders.[58] Stiles[55] and colleagues went so far as to analyze the verbal interaction that occurred during the physical examination and closing consultation as well.

In addition to process, medical content has been assessed from either the verbal interaction itself[16] or from a written history.[53] Checklists for assessing medical content also have been employed.[18,20,27,56,57]

Qualitative assessments of verbal interaction have been attempted.[20,35,56,61] Stillman[56] and colleagues used a list of 16 interviewing skills. Levels of excellent, average and poor performance are described for each of the 16 skills resulting in an overall process score. Ross[50] has reported a global method in which faculty reviewers rate videotaped interviews in terms of overall quality of

performance.

Outcome Indices

Outcome indices, such as patient satisfaction, have been employed in conjunction with analysis of verbal interaction.[55,62] Additional outcome indices would include patient compliance, adherence to a treatment regimen, and rate of return for follow-up visits.

Assessment Considerations

Generally speaking, methods used to assess the interpersonal skills of interviewing differ as to:

1. The number of skills assessed;
2. Which skills in particular are assessed;
3. Consideration of nonverbal, as well as, verbal behaviors;
4. Assessment of the content vs. interview process;
5. Quantitative vs. qualitative emphasis in the assessment method;
6. Simplicity vs. complexity of the method itself or of the instrument used to record observations of interview performance; and
7. Who is doing the assessment--the student him/herself, peers, instructor, simulated or real patient, external raters.

Factors that enter into deciding which assessment approach to take, and that account for the variations listed above, include: available personnel, number of students, time, facilities, equipment, cost, and the purposes, goals, and objectives of the instruction provided. As they require considerable effort to implement effectively, thoughtful planning and care should be exercised in selecting or designing an assessment procedure.

Concluding Comments

For the health care provider to be effective in his/her capacity as

practitioner, manager, employer, administrator and teacher, he/she must be able to deal with people.[64] The interpersonal communication skills outlined in this paper are transferable; appropriate not only to medical interviewing but for communicating with people in general. The development of interpersonal skills is a life-long process; the more they are used the better one becomes at using them.

The success, in terms of lasting effects, of any interpersonal communication skills course is dependent upon the support it receives from the profession, school and faculty. The total academic environment influences student learning of, and continued use of interpersonal skills. If faculty do not care about interpersonal skills in their interactions with patients, students cannot be expected to care about them either. Furthermore, if students attempt to use interpersonal skills and their efforts are not reinforced, then they are not likely to expend the effort to interact with patients effectively. Students' use of interpersonal communication skills must be positively reinforced in order for those skills to become established behaviors in their behavioral repertoires.

All clinical faculty should be called upon to recognize, as part of their responsibility as models, the demonstration of interpersonal communication skills when interacting with patients and with students, for, according to Wise,[65] "We cannot expect students to be any nicer to patients than the faculty are to students."

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QUESTIONING: MECHANICS AND DYNAMICS

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Friday, March 23, 1979

Didactic VII

Questioning: Mechanics and Dynamics*

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INTRODUCTION

> "Involved in any deep communication between persons is the ability to ask appropriate questions and to listen. This is the genius of communication. To listen and question at just the right place and degree delimits the truly brilliant instructor from the average. ...A properly phrased question often is the necessary input needed to ignite the student's thinking and creative processes. ...Clearly the questions a teacher asks can make the difference between an antiquated wasteland and an exciting learning environment."[1]

Often students see questions as interrogation techniques of instructors as opposed to a vital, integral part of teaching and learning. Used in a creative way, questioning is an excellent teaching tool. Instructional purposes of questions include:

1. arousing student interest and motivation;
2. evaluating student preparation;
3. checking student comprehension;
4. diagnosing students' strengths and weaknesses;
5. reviewing and summarizing;
6. encouraging discussions;
7. directing students to new possibilities for solutions to problems;
8. stimulating students to seek additional information on their own;

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*This paper was adapted from and closely parallels workshop materials developed through the Teaching Improvement Project by the Center for Learning Resources at the University of Kentucky.

[1]Arthur A. Carin, Teaching Science Through Discovery, 3d ed., Columbus, Ohio: Charles E. Merrill Publishing Co., 1975, p.2.

9. building up a student's self-concept;

10. helping students see applications for previously learned material; and

11. assessing whether or not the goals and objectives of a lesson have been achieved.[1]

Questioning, used in light of these purposes, is not only a method of assessment and evaluation, but is also a unique factor in classroom, laboratory, and clinical management which influences the thinking processes and the social and emotional climate of the teaching-learning situation.[2] The ability to use questioning effectively is a skill that can be developed and refined. Effective questioning involves not the number of questions asked, but, more importantly the levels and types of questions, the methods used in asking them, and the manner of the instructor in dealing with student responses.[3] Succinctly put, these are the mechanics and dynamics of questioning.

THE MECHANICS OF QUESTIONING

There are many ways to classify questions and the processes of asking questions — surprisingly they span several years.[4,5,6] In this paper, the mechanics of questioning will be dealt with in terms of eliciting questions: convergent and divergent; levels of questions; and probing questions. While not as esoteric and theory-laden as others, this question classification system is pragmatic and easily adapted into an instructor's teaching situation.

Eliciting Questions

Often an instructor asks an eliciting question first and follows it with related questions. Eliciting questions can be used effectively to initiate a discussion or to change the topic or the train of thought during a teaching-learning situation. Eliciting questions can be categorized as either convergent or divergent. Each of these two categories of eliciting questions requires the learner to think at different levels in order to make an appropriate response.

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[1] Ibid, pp 23-24.

[2] Ronald T. Hyman, Ways of Teaching, 2nd ed., Philadelphia: J.B. Lippincott Company, 1974, p.291.

[3] Teaching Improvement Project, "Questioning: The Mechanics and Dynamics," Center for Learning Resources, Lexington: University of Kentucky, p.4.

[4] Patricia E. Blosser, Handbook of Effective Questioning Techniques, Worthington, Ohio: Education Association, Inc., 1973.

[5] C. W. Odell, "The Use of the Question in Classroom Instruction," Urbana: The University of Illinois, Educational Research, Circular No. 29, September, 1924.

[6] Morris Sanders, Classroom Questions: What Kinds, New York: Harper and Row, 1966.

Convergent questions relate to low-level thought processes for the learner. Responses to convergent questions are predictable by the instructor and usually are specific, short, and factual. Instructors often use these for purposes related to reviewing material and to verify retention of knowledge. Convergent questions can be used to promote the identification and grouping of relationships. Used in this way, higher levels of thought processes are involved as the learner develops a response. Convergent questions ask the learner to:

1. answer yes or no
2. compare
3. contrast
4. define
5. designate
6. explain
7. identify
8. name
9. state relationships
10. recall

Divergent questions contrast to convergent questions in that they allow and encourage a variety of responses. They can be thought provoking and as such do not always elicit predictable responses. Divergent questions call into play higher level thinking and help the learner develop applications, alternatives, insights, appreciations, and new attitudes. Used to this end, divergent questions force the learner to:

1. defend
2. hypothesize
3. infer
4. judge
5. justify
6. predict
7. reconstruct
8. value

Eliciting questions have been categorized as convergent and divergent. One recognizes a synonomous categorization might have been closed and open. Closed questions cause convergence and have a limited number of acceptable responses. Open questions cause divergence and have a wide range of acceptable responses. The discriptors for convergent and divergent questions implied lower and higher levels of thinking, thus the next step in developing the mechanics of questioning is to examine a hierarchy of levels of questions.

Levels of Questions

Too often instructors ask questions which focus learners' responses on the lowest levels – remembering, recalling, and repeating. Moriber[1] studied types of questions asked by college science instructors and found that the vast majority of questions asked were at the memory level. In the study only two percent (2%) were asked at the higher levels requiring learners to synthesize or evaluate. Instructors who work at developing the skill of questioning can use questions to lead learners through all levels of thinking, from simple recall to high-level critical thinking.

For purposes of this paper, three levels of questions will be developed: knowledge, application, and problem solving. This three-way classification is closely related to the taxonomic classification of educational objectives.[2]

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[1]George Moriber, "Types of Questions Asked by College Science Instructors," Paper presented at the National Association for Research in Science Teaching, 1971.

[2]Benjamin S. Bloom, et al., Taxonomy of Educational Objectives, The Classification of Educational Goals, Handbook I: Cognitive Domain, New York: David McKay Company, Inc., 1956.

Most studies of classroom interaction confirm that the great majority of questions asked by instructors fall into the knowledge level. These types of questions are used to determine that the learner possesses and understands basic information. In responding to this level of questions, the learner relies upon memory. In many cases, the response can be made without a real understanding of previously presented information. If, however, the learner is asked a knowledge level question which requires him to translate information from one form to another, to summarize what he has previously learned, or to compare and contrast given entities from previously studied information, he is then demonstrating comprehension.

Knowledge level questions are important in the teaching-learning situation. They can be used to ascertain the learner's possession and understanding of basic, essential information. In many of the health care areas, it is crucial that certain skills be performed in an established sequence of steps. Knowledge level questions have important applications in determining that the learner has mastered these skills. In essence, knowledge level questions reflect information which should be remembered and understood long after he has left the learning situation. Key words which often appear in this level of questioning are:

1. associate	6. differentiate	11. name	16. review
2. compare	7. distinguish	12. paraphrase	17. show
3. contrast	8. identify	13. recognize	18. state
4. define	9. indicate	14. repeat	19. summarize
5. describe	10. list	15. restate	20. tell

A higher level of question is the application question. This type of question deals with explanatory information that can be transferred from the knowledge or comprehension levels and put to actual use. Thus application level questions allow the instructor to assess a learner's ability to transfer and use information. At the knowledge level he may only have been required to repeat it.

Interestingly, application questions facilitate the learning process. By responding to application questions, the learner is confronted with concrete reasons for learning the information and hopefully will be further motivated to learn. If no direct clinical or laboratory application is seen of presented information, learners may question its relevance and find it more difficult to remember. Key words which often appear in the level of questioning are:

1. calculate	7. illustrate	13. record
2. demonstrate	8. locate	14. set up
3. draw	9. measure	15. sketch
4. employ	10. operate	16. solve
5. estimate	11. perform	17. trace
6. give an example	12. prescribe	18. use

The three highest levels of the taxonomy of educational objectives are analyzing, sythesizing, and evaluating.[1] Learners are using critical thinking abilities when they are responding to questions which require behaviors such as these; for all practical purposes, questions which require these higher

[1] Ibid. p. 18.

order behaviors can be termed problem solving questions. In responding to an analysis question, the learner must break down a topic or situation into its component parts. In responding to a synthesis question, the learner must recognize component parts in order to create an alternative, solution, or statement, that is new to him. Finally in responding to an evaluation question, the learner must make a judgment, choose the best alternative or solution, and justify or defend his choice.

Problem solving questions are useful for determining student learning and are vital in teaching how to use a scientific, critical approach to clinical and laboratory situations. Hopefully the use of problem solving questions will guide the learner through alternatives that as a professional he must do for himself before taking action. Increased interest, better retention, greater involvement, and guided practice in operating as a professional are all benefits to students through problem solving questioning. Key words which often appear in this level of questioning are:

1. advocate	7. construct	13. design	19. decide
2. assess	8. create	14. formulate	20. propose
3. challenge	9. criticize	15. infer	21. rank
4. choose	10. debate	16. judge	22. recommend
5. compare	11. defend	17. organize	23. suggest
6. conclude	12. derive	18. plan	

Probing Questions

At this point it should be seen that the instructor skilled in questioning can plan ahead with questions that are designed to produce particular types of responses or even learning. However, occasions arise which will require the instructor to deviate from a planned questioning sequence. To a question there may be either a response or no response. If there is a response, it may be correct, partially correct, or incorrect. If there was no response, the instructor may wish to restate the question after adjusting its wording or structure.

Looking particularly at the situation where there was a response but which was incorrect, incomplete, inappropriate, or disorganized, this is the place for a probing question. Probing questions are addressed to an individual learner within the given group. They are designed to lead learners to an articulation of a correct or more appropriate response usually to an already stated question. Additionally, these questions serve to increase active student participation and to decrease teacher-talk during teaching-learning situations.

There are five categories of probing questions. These are: 1) prompting, 2) justification, 3) clarification, 4) extension, and 5) redirection. Prompting questions give support firstly to the learner who has given a weak or incorrect answer and secondly to a more hesitant, reluctant learner who may not be sure of his knowledge base. Justification questions seek to determine if the learner really understands his own answer. Often it is just as profitable, if not more so, to use this type of question with a learner who has given a correct answer to a previous question as opposed to an incorrect answer. Clarification questions are useful when a poorly organized or incomplete response has been given. The learner may be asked to rephrase or to explain the original response. Extension questions go beyond original responses and can easily be used to develop ramifications.

Redirection questions are used to guide the discussion and to involve more than one learner in the answering of a previous question.

In summary, it must be pointed out that planning questions is an important and integral part of preparing for a teaching-learning situation. Admittedly, good questions are not always planned; the nature and evolution of a teaching-learning situation may create appropriate, insightful questions that could not have been planned. By and large though, the well prepared instructor will be better able to handle these situations as they arise and will be better able to utilize them.

THE DYNAMICS OF QUESTIONING

As with so many things in life, atmosphere plays an important role in the success of a situation or an event — a good dinner, conversation with friends, or selling a product. So it is with questioning. The important elements which define or create the atmosphere for questioning are: phrasing the questions, delivering the questions, dealing with student responses, and specific instructor behaviors. Just as instructors are able to develop the skill of asking questions to enhance learning, instructors also can develop the skills of creating an appropriate atmosphere for questioning.

Phrasing the Questions

If a question is asked in a confusing manner with awkward phrasing, it can confuse the learner, and it will lose its effectiveness. Ambiguous questions do not provide adequate criteria for the learner to use in formulating a meaningful response. Such questions are vague. Sometimes questions are confusing because too much information is given. The learner may not be able to isolate the appropriate elements in order to answer the question appropriately. Questions should be phrased at an appropriate vocabulary level. Questions containing new words or unfamiliar terms are difficult to grasp.

Delivering the Questions

Several technqiues can be used to enhance learner participation. Addressing the question to the entire group, pausing for think-time, and asking a specific person to respond puts all learners in a position to formulate a response. Directing questions to specific learners can bring an inattentive person back into the discussion or can encourage a more shy or unsure person to respond. Avoid asking questions which encourage the group to respond as a whole. This allows persons not to accept responsibility for answering. Make every attempt to involve as many persons as possible in discussions by the use of questions. Some learners will not volunteer answers and must be "nudged" into doing so. Questions addressed to as many learners as possible — volunteers and non-volunteers, "superior" learners and "slower" learners — create a more dynamic teaching-learning situation.

Dealing with Student Responses

Be diplomatic and provide reinforcement to most all answers whether right or wrong. Avoid negative reactions tinted with sarcasm, reprimands, or accusations. These can be interpreted as personal attacks by learners, and even if not directed at a person in particular, will make all learners hesitant to respond to additional questions.

Allow for plenty of time for a response to be formulated after a question has been asked. Most instructors, unless they are conscious of waiting, will allow less than one second for a learner response to a question. Usually they will rephrase the question or go on to another person for a response. Increasing "wait-time" has several benefits:

1. The length of student responses increases.

2. The number of volunteers increases.

3. Learners reflect more confidence in their answers.

4. Speculative thinking increases.[1]

Listen sensitively to each responder and to each response. Focus attention on the learner and pay attention to what he is saying; maintain eye contact. Do not evaluate what the responder is saying until he has finished his response. Do not interrupt, but ask for necessary clarification only after the responder has completed his statements. Watch for nonverbal clues which may indicate a learner's desire to respond or to initiate a question.[2]

Finally, give the learner feedback. This allows him to determine and evaluate his performance. Positive feedback provides motivation and increases the chances that all persons will participate in future discussions. Positive feedback should be specific and immediate. It does not need to be elaborate; in fact, it should not be. When it is necessary to give corrective feedback for incorrect or inappropriate responses, direct the feedback at the response and not at the learner. Feedback is an important element in the teaching-learning process. It helps learners to more fully understand the material under consideration.

Specific Teaching Behaviors

Atmosphere of the teaching-learning situation is so influenced by the instructor's behaviors. Learners quickly perceive whether the situation is one of acceptance and congeniality or if it is one of rejection and hostility. As an instructor, it is important to recognize the effects developed within learners by his verbal and nonverbal behaviors created through eye contact, movements, gestures, facial expressions, and tone of voice. How one says something speaks more loudly than what is said. The

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[1]Mary Budd Row, "Wait-Time and Rewards as Instructional Variables: Influence on Inquiry and Sense of Fate Control," New Science in the Inner City, New York: Teachers College, Columbia University, 1970.

[2]Arthur A. Carin and Robert B. Sund, Developing Questioning Techniques: A Self-Concept Approach, Columbus, Ohio: Charles E. Merrill Publishing Co., 1971, p. 130.

way words are spoken become the communication as opposed to the words. Instructor behaviors are constantly observed and interpreted by learners and used by them as feedback both in terms of how they are progressing and what the instructor thinks of them as persons. The instructor who wishes to generate the atmosphere most conducive to effective learning will be aware of the effect of his behaviors especially during questioning activities. This is when he is in most "direct contact" with the learners.

In summary, one must recognize that in the health professions, learning for the sake of learning is a luxury. "The primary goal is to exit persons who can competently utilize, not simply possess, knowledge and skills."[1] Questioning is one skill which will greatly contribute to the learning process. Questioning skills are two pronged: first, there is a style of phrasing questions, and second, there is a style of delivering questions. Used in concert learners become effective, independent professionals.

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[1]Teaching Improvement Project, "Questioning: The Mechanics and Dynamics," Center for Learning Resources, Lexington: University of Kentucky, p. 61.